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ABSTRACT

Contained in this publication of Northeastern Oklahoma State University are faculty publications and research reports; abstracts of faculty-student research projects; a list of individual and group inservice activities and research in progress by college department and divisions; and a bibliography of published articles, books, and creative works. The following articles are included: "Faculty and Student Evaluation of Enrollment Procedures at Northeastern Oklahoma State University," by James A. Adams, James W. Jones, and Major L. McClure; "Book Losses at a State University," by David H. Eymann; "Chief Greenwood Leflore and His Malmaison Plantation" by R. Halliburton, Jr.; "A Comparison of Random Number Generator Subroutines," by Daniel L. Hansen; "Fear Evoked Bradycardia in the Free Ranging Woodchuck 'Marmota monax'," by E. Norbert Smith and Robert A. Woodruff; "A Method of Teaching Managerial Accounting," by Irma Stierwalt; "Organization of Physical Education and Sport in the USSR," by Martha Sturdevant; and "A Model for Establishing Graphic Communications Within the Practical Arts Division of Northeastern Oklahoma State University," by Earl G. Yarbrough.

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Faculty Research, Publications, In-Service Activities

at

Northeastern Oklahoma State University

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*Northeastern Okla
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TO THE EDUCATIONAL RESOURCES
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FACULTY AND STUDENT EVALUATION OF ENROLLMENT PROCEDURES
AT NORTHEASTERN OKLAHOMA STATE UNIVERSITY *

James A. Adams
James W. Jones
Major L. McClure

What are the attitudes and opinions of faculty and students at Northeastern Oklahoma State University toward the present enrollment procedures? In order to make valid judgments concerning any procedure there must be adequate feedback from those who have been exposed to that procedure. Therefore, the purpose of this study was to secure such feedback from faculty and students.

Two different survey instruments were devised. One instrument was devised to secure faculty feedback and one instrument was devised to secure student feedback. Both survey instruments were in the form of questionnaires. Each questionnaire was first submitted to a trial group. Suggestions were requested from the trial groups in the form of additions, deletions, and clarifications. Changes were made in the questionnaires based on these suggestions.

The decision was made to administer the revised questionnaires to all teaching faculty. A list of the names of such faculty was obtained from the office of the President of the University. The total number of questionnaires administered to the faculty was 208. The number of questionnaires returned was 131, or sixty percent. The tabulated responses from the faculty questionnaires are included in Table 1.

Table 1

FACULTY EVALUATION OF ENROLLMENT PROCEDURES
AT NORTHEASTERN OKLAHOMA STATE UNIVERSITY
(N = 131)

Question	Responses in Percentages		
	Agree	Un-decided	Dis-agree
1. Present enrollment procedures are satisfactory.	15	11	74
2. The amount of time scheduled for enrollment is too long.	67	9	24

(continued on next page)

*A complete text of this study including a detailed analysis may be obtained from the authors.

(Table 1 - continued)

Question	Responses in Percentages		
	Agree	Un-decided	Dis-agree
3. All time schedules and memorandums relating to enrollment should be cleared through the office of the Vice-President for Academic Affairs to assure uniformity.	68	19	13
4. Action should be taken to insure some degree of uniformity of class size for courses offered in multiple sections.	83	11	6
5. Regardless of class size, students should be allowed to choose their instructors and hours of instruction when multiple sections of a course are scheduled.	23	14	63
6. During enrollment all academic advisors should periodically be sent a memorandum indicating which classes have been closed and other changes which have been made in the schedule of courses.	82	11	7
7. Computer printouts of enrollment data are disseminated as rapidly as could be reasonably expected.	48	15	37
8. Computer printouts of enrollment are as accurate as could be reasonably expected.	47	16	37
9. With the exception of securing a trial study approved by their advisor, all student contacts during the enrollment procedure should be located in the enrollment center (example, housing cards).	90	9	1
10. Wearing of identification badges by faculty, staff, and workers during enrollment is no problem to those involved.	73	6	21
11. Wearing of identification badges by faculty, staff, and workers helps the students in their enrolling.	56	22	22
12. A permanent identification badge giving the person's name and department should be issued to all faculty, staff, and administrators.	43	20	37
13. Faculty who have advisees should not be assigned to work in the enrollment line. (Graduate faculty should work undergraduate enrollment and undergraduate faculty should work graduate enrollment.	13	27	42
14. All administrative offices, book store, and other offices having to do with enrollment should be open during all			

(Table 1 - continued)

Question	Responses in Percentages		
	Agree	Un- decided	Dis- agree
enrollment hours, including late enrollment.	90	7	3
15. Students should be used to hand out class cards in the enrollment line under the supervision of a faculty member.	46	20	34
16. There should be someone available at each enrollment station with authority to make decisions.	85	9	6
17. The present method of late enrollment is satisfactory.	18	16	66
18. Late enrollment should be scheduled by the Vice-President for Academic Affairs.	55	31	14
19. Pre-enrollment should be held for all students.	83	8	9

The data presented in Table 1 indicated that the majority of the faculty believe:

1. Present enrollment procedures are unsatisfactory.
2. The amount of time devoted to enrollment is too long.
3. All schedules and memoranda pertaining to enrollment should be cleared through the office of the Vice-President for Academic Affairs to insure uniformity.
4. Maintaining uniformity of class size is more important than student choice.
5. Periodic memoranda to academic advisors concerning class closing and schedule changes should be more frequent.
6. The speed and accuracy of dissemination of enrollment printouts was not totally acceptable.
7. All enrollment stations should be in one central location.
8. The wearing of identification badges should be continued. A permanent badge would be more acceptable.
9. Assignments for working in the enrollment lines should be based on the instructors' advisee loads.
10. All administrative offices, book store, and other offices having to do with enrollment should be kept open during the time enrollment is in progress.
11. Someone with authority should be at each enrollment station for authoritative decision making.
12. The time for late enrollments should be shortened.
13. Late enrollment should be scheduled by the Vice-President for Academic Affairs.
14. Pre-enrollment must come about.

The decision was made to administer the revised student questionnaire to a sample of students according to college classification. A total of all students according to classification was secured from the Office of the Registrar. Table 2 indicates the total number of students according to college classification and the number in each classification participating in the study.

Table 2
NUMBER AND PERCENTAGE OF STUDENTS PARTICIPATING
IN THE STUDY BY CLASSIFICATION

Classification	Total	Number Used	Percentage
Freshman	1465	229	16
Sophomore	896	158	18
Junior	1159	244	21
Senior	1078	191	18
Graduate	992	192	19
Special	256	24	9
Total	6151	1038	17

The revised student questionnaire was administered to 1,038 students during October, 1977. A composite of all student responses to the questionnaire is shown in Table 3. The responses by student classification are shown in Table 4.

Table 3
COMPOSITE OF STUDENT EVALUATION OF ENROLLMENT PROCEDURES
AT NORTHEASTERN OKLAHOMA STATE UNIVERSITY
(N = 1038)

Question	Responses in Percentages		
	Agree	Un-decided	Dis-Agree
1. Obtaining a signed trial study from an academic advisor was no problem.	79	1	20
2. Obtaining a housing/address card was no problem.	68	14	18
3. Obtaining a permit to enroll was no problem.	83	6	21
4. Getting into the area for securing cards was no problem.	71	7	22
5. Securing class cards was no problem.	67	9	24
6. Filling out class cards was no problem.	78	8	14
7. Going through the line to validate class cards was no problem.	56	9	35
8. Paying fees was no problem.	66	6	28
9. Validating loans, grants, work study, G.I. Bill, etc., was no problem.	47	27	26
10. Securing a parking permit was no problem.	76	12	12
11. The total enrollment procedure did not present any problems.	34	15	51
12. Enrolling late was no problem.	19	67	14
13. Changing classes was no problem.	23	48	29
14. All offices were open to me during my enrollment, including the noon hour.	46	23	31
15. The general attitude of the enrollment workers was positive.	61	18	21
16. The amount of time and effort spent in enrolling was worth the effort.	39	25	36
17. The procedure of setting times (based on university hours completed) is a good method. (continued)	59	24	17

(Table 3 - continued)

Questions	Responses in Percentages		
	Agree	Un- decided	Dis- agree
18. Action should be taken to insure some degree of uniformity of class size for courses offered in multiple sections.	63	25	12
19. Regardless of class size, students should be allowed to choose their instructors and hours of instruction when multiple sections of a course are scheduled.	62	22	16
20. Wearing of identification badges by faculty, staff, and workers during enrollment helps the students in enrolling.	79	16	5
21. Students should be used to hand out class cards in the enrollment line under the supervision of a faculty member.	37	34	29
22. There should be someone available at each enrollment station with authority to make decisions.	90	7	3
23. What part of the enrollment process caused you the most problems?			
24. Which enrollment personnel (if any) were least helpful?			
25. Which enrollment personnel (if any) were most helpful?			
26. Would you take advantage of a pre-enrollment procedure if the university should establish one?	86	10	4

The data in Table 3 indicated that the majority of the students believe:

1. Obtaining a signed trial study is no problem for students.
2. Obtaining a housing card is no problem for students (if the cards are obtainable in the same location as enrollment occurs).
3. Obtaining a permit to enroll is no problem for students.
4. Getting into the area for securing class cards is no problem for students.
5. Securing class cards from the various enrollment stations is no problem for students.
6. Completing class cards is no problem for students.
7. Going through the line to validate class cards is no problem for students.
8. Paying fees is no problem for students.
9. Validating loans, grants, work study, G.I. Bill, etc., presents some problems for students.
10. Securing a parking permit is no problem for students.
11. The total enrollment procedures presents some problems for students.
12. The students are undecided about late enrollment (whether or

Table 4
STUDENT EVALUATION OF ENROLLMENT PROCEDURES
AT NORTHEASTERN OKLAHOMA STATE UNIVERSITY

Question	Special			Graduate			Responses in Percentages												Sophomores			Freshmen		
	A	U	D	A	U	D	Seniors			Juniors									A	U	D	A	U	D
1	84	0	16	72	3	25	83	1	16	74	4	22	75	4	21	86	4	10						
2	54	30	16	69	16	15	72	7	21	67	11	22	74	10	16	72	12	16						
3	71	4	25	73	3	18	80	3	17	78	4	18	71	4	25	65	11	24						
4	75	4	21	74	17	19	79	4	17	74	8	18	63	8	29	58	27	25						
5	83	4	13	71	7	22	74	8	18	60	10	30	61	10	29	55	16	29						
6	92	4	8	78	6	16	78	8	14	77	9	14	76	11	13	66	17	17						
7	62	4	34	57	11	32	53	8	39	52	8	40	55	11	34	53	14	33						
8	71	4	25	66	8	26	68	8	31	61	7	32	62	9	29	65	12	23						
9	22	63	15	45	34	11	48	20	32	44	22	34	58	14	28	44	22	34						
10	58	21	21	75	11	14	79	11	10	80	14	6	84	11	5	77	9	14						
11	46	8	46	37	15	48	32	13	55	29	13	58	29	16	55	32	23	45						
12	10	80	10	22	63	15	22	62	16	15	75	10	18	68	14	24	56	20						
13	12	76	12	20	58	22	23	40	37	14	50	36	17	48	35	29	42	29						
14	54	21	25	48	26	26	48	17	35	47	19	34	41	27	32	40	28	32						
15	66	17	17	64	18	18	63	17	20	61	15	24	58	24	18	52	22	26						
16	38	20	42	36	28	36	42	19	39	39	26	35	38	29	33	43	26	31						
17	54	37	9	67	21	12	68	15	17	65	18	17	50	25	25	47	33	20						
18	66	25	9	55	30	15	63	25	12	62	24	14	67	21	12	62	28	10						
19	58	29	13	69	17	14	68	16	16	59	21	20	55	25	20	65	22	13						
20	83	13	4	78	20	2	81	12	7	78	15	7	79	17	4	73	20	7						
21	38	24	38	39	32	29	44	29	27	36	39	25	31	38	31	36	41	23						
22	96	4	0	96	3	1	95	4	1	96	6	1	87	9	4	71	18	11						
23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--						
24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--						
25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--						
26	79	17	4	82	15	3	91	7	2	93	5	2	89	8	3	82	10	8						

A = Agree U = Undecided D = Disagree

- not it presents a problem for them).
13. Changing class enrollment is no problem for students.
 14. Students agree that all offices having to do with enrollment should be open during enrollment hours (to include administrative offices, book store, etc.).
 15. The general attitude of workers in the enrollment line is positive.
 16. The amount of time and effort in enrolling should be lessened.
 17. The procedure for scheduling enrollment based on university hours completed is a good method and should be continued.
 18. Some action should be taken to insure some degree of uniformity of class size for courses offered in multiple sections.
 19. Regardless of class size, students should be allowed to choose their instructors and hours of instruction. This is inconsistent with the above data.
 20. Wearing of identification badges aids the student in enrolling.
 21. Students should not be used to hand out class cards in the enrollment line.
 22. There should be someone at each enrollment station with the authority to make final decisions.
 23. Something should be done to prevent long lines, having to wait, and the amount of time for enrolling.
 24. Pre-enrollment must come about.

A survey of the responses of students and faculty and their comments on the data-gathering instruments indicated varying degrees of satisfaction with the present enrollment system. While there were some complaints and some low ratings, when one considers the number of students and faculty involved and the many individual differences, the overall ratings were rather good. Many students and faculty wrote comments indicating that they recognized the problems involved and indicated that a little more responsible action on the part of students and faculty would make the process proceed much more smoothly. Some students and some faculty members who voiced complaints seemed to center on one aspect of the enrollment procedure without looking at the entire process. One thing both students and faculty agreed on almost unanimously was the need for some type of pre-enrollment.

It has been recognized by the researchers that the enrollment process has been in a state of change and that the responses received on this research study might differ if a similar study were conducted during any succeeding semester.

Significant concerns have been discovered, however; and in the evolving processes which may constitute the enrollment procedure at some future date, those concerns can offer guidance. To those charged with the responsibility of structuring the enrollment procedure, they signal concerns which must be evaluated with the possibility of change.

The writers recognize that the concerns of both faculty and students do not take into consideration either legal mandate or other non-negotiable aspects of the enrollment process, but where restructuring of the process is possible they feel that the information

gained from this study should be utilized.

Faculty and student morale should be of vital concern to all university personnel, and where discontent can be moderated or alleviated the institution will benefit.

BOOK LOSSES AT A STATE UNIVERSITY

David H. Eymann*

Theft of library materials is a problem which is receiving an increasing amount of attention from librarians. While books have wandered away from libraries ever since the early chains were removed, it appears that either the rate of theft is increasing dramatically or librarians are more willing to talk about the problem, or perhaps both.¹ For the library users, these losses of library materials mean inadequate information sources and mounting frustration in seeking items which are supposedly available. For the librarians, these losses represent financial problems as well, even when only a portion of the lost material is replaced. For all concerned there is a growing sense of despair over the magnitude of the problem.

One response in recent years by librarians to the problem of disappearing books has been theft detection systems.² Such systems have progressed substantially from the early false-alarm plagued, bulky systems of the mid-1960's to stylish, inconspicuous installations which perform their detection functions quite well.³ Whether the security system used is designed for by-pass operation--where an attendant passes materials around the detection point--or for full-circulating operation--where the patron carries the materials through the detection point--theft detection systems are available on the market to solve, or to reduce considerably, the problems of book losses for the librarian.⁴

North-eastern Oklahoma State University in Tahlequah recently purchased a theft detection system in an attempt to solve several problems within the Library/Learning Resources Center. The system, a Checkpoint Mark II installation designed for full-circulating operation, was placed in the building between the close of the summer session and the start of the fall term in 1976. While this system was accepted by the library staff with mixed emotions--referred to as "gadgets" by some--it was conceived as a partial solution to only three problems:

Problem 1: Building access. Prior to the installation of the security system the Library/Learning Resources Center had one entrance/exit on the south side (campus side) of the building. Direct access was not possible to and from a large commuter parking lot on the north side of the building or to and from the audio-visual wing of the building on the east.

Problem 2: Personnel utilization. The exit control procedures in use before the security system was installed required the equivalent of two full-time personnel with duties as security checkers at a cost of more than \$12,000.00 per year. Requests for additional personnel for other library work areas were received unkindly by the University administration.

Problem 3: Book losses. Although book losses from

the Library/Learning Resources Center had not been measured in any systematic fashion in recent years, the feeling was that losses were at unacceptable levels. Spot checks and complaints confirmed this view.

The success or failure of a theft detection system can be based on a variety of factors. While such factors as initial system cost, patron dissatisfaction with the system, false alarms, etc., have all been taken into account, the Checkpoint system installed at Northeastern Oklahoma State University must be measured against the three problem areas described above to determine whether it has been "successful." Hard data exist for examination in considering each problem.

For the problem of building access, the system has been an unqualified success. Instead of one entrance/exit point from the building there are now three; direct access to the first floor from the parking area north of the building is now available as well as direct access from the audio-visual building wing. While these exits could have been opened with the same sort of manual exit check procedure which was in use on the building's former single exit, the costs would have been prohibitive. Unstaffed exits would have exacerbated the book theft problem. There is no question about the solution of this problem by the security system.

The second problem--personnel utilization--was also partially solved by the security system. Because the Checkpoint system was installed as a "full-circulating" operation, personnel are not required at the exit points. The two exits near the circulation desk are visible to and monitored by personnel working at that desk. The north exit is visible to and monitored by personnel at the audio-visual reserve desk located near that exit. Personnel formerly required for the single building exit have been diverted to other library departments at a cost savings of over \$24,000.00 in the first two years of system operation.⁴

The primary purpose of a theft detection system, however, is to detect thefts. Measuring the success of the Checkpoint system in solving this third problem proved more difficult than determining the success of the system in solving the two problems described above. In order to check for possible book losses within a restricted period of time, one needs to examine items at both the beginning and end of the period. As no inventory had been completed on library materials at this institution for several years prior to the installation of the security system, the entire collection could not be examined without a lengthy, and costly, inventory.

The examination of a portion of the collection would suffice if that portion could be assumed to have been on the shelves at a certain time in the recent past. With this criterion in mind, the acquisitions list was chosen as a measurement tool. These lists are prepared periodically during the year and are comprised of items entered into the collection during a readily-identifiable time. Furthermore, these lists are primarily of new materials and, as it has been pointed out, new materials are more susceptible to theft than older materials.⁴

In order to tie the rate of book losses to the security system

installation, a three-year study of checking acquisitions lists was initiated in the spring of 1976. Lists from one fiscal year were checked in the spring of the following year, or after the materials had been available in the library for at least six months and no longer than twenty-four months. In 1976 the 1974-75 acquisitions lists were examined; in 1977 and 1978 the 1975-76 and 1976-77 lists were examined respectively. The significance of these three years lies in the installation date of the security system. The 1974-75 acquisitions lists contained items added to the collections and checked before the system was installed. The 1975-76 lists contained items added before the system was installed but checked after the system had been in operation for at least six months. The 1976-77 lists contained items added and checked after the system was installed.⁵ Checking all three lists would provide a "before and after" effect.

Because checking the entire list each time would be a rather time-consuming task, it was decided to check only a sample of the materials for each year's lists. Accordingly, the lists for each year were placed in chronological sequence and the items numbered sequentially for the entire year. Then, using a random number table, a sample of approximately ten per cent of the items on the acquisitions lists was drawn. This sample was checked in the following sequence to determine whether the items were still available:

1. Check book shelves (call numbers on acquisitions list).
2. Check circulation records.
3. Check books awaiting shelving.
4. Check card catalog to verify call number.
5. Check book shelves (after a one-week delay).
6. Check circulation records.
7. Check books awaiting shelving.

Each item in the sample was checked through this sequence until it was found or until the entire seven-step sequence was completed and the book was considered missing. The checking was done by student assistants employed in the office of the Director and in the reference area.

Table 1
BOOK LOSS FROM THE ACQUISITIONS LISTS SAMPLE

Year	Total Items	Sample Size	Loss
1974-75	3917	404 (10.3%)	66 (16.3%)
1975-76	7673	820 (10.7%)	38 (4.6%)
1976-77	5506	548 (10.0%)	16 (2.9%)

The results of these three years of searching for newly acquired items are shown in Table 1. The change in the number of items acquired over the three-year period was largely the result of a substantial budget increase begun in 1975-76 and continued in 1976-77. The actual book loss in the sample and the percentage of the sample lost dropped quite noticeably over the period of the study. This drop cannot be explained merely by examining such variables as enrollment or circulation of materials from the Library/Learning Resources Center. Enrollment, as reflected in student credit hour production,

was relatively stable during this time.⁶ Circulation dropped off slightly in 1975-76 but recovered in 1976-77. In the absence of other variables which one can observe, the conclusion would have to be that a major factor in this decrease in book loss was the Checkpoint Mark II security system.

Table 2
PROJECTIONS OF THE SAMPLE LOSS

Year	Loss Rate of Sample	Total Items	Projected Total Loss	Average Book Cost	Projected Dollar Loss
1974-75	16.3%	3917	638	\$16.19	\$10,329.22
1975-76	4.6%	7673	353	16.32	5,760.96
1976-77	2.9%	5506	160	18.03	2,884.80

SOURCES FOR AVERAGE BOOK COSTS: "Title Counts and Average Prices Per Volume," Publisher's Weekly 212 (August 22, 1977), 32; "Highlights of Book Trade Statistics 1976-77," Publisher's Weekly 213 (February 20, 1978), 69.

The results of this three-year reduction in book losses are even more striking when one projects the sample loss onto the total acquisitions, as shown in Table 2. At the average book price of \$16.19 in 1975 the projected total loss of materials acquired during the 1974-75 year exceeded \$10,000.00. By 1977 the average price of books had increased over eleven per cent, to \$18.03. Yet, the projected loss of books from the 1976-77 acquisitions lists was less than \$3,000.00. There are two limitations with these figures which make them even more interesting: first, the study embraced only new materials. These new materials tend to disappear at rather high rates; there will be older materials disappearing as well, however, although at slightly lower rates. If one accepts the premise that the noted reduction in the loss rate for new books was the result of the security system, then one must assume that the disappearance of older materials will have been reduced as well. This means the dollar savings would be larger than noted in Table 2. Second, the projected monetary loss shown in Table 2 is a reflection only of the initial cost of materials. These figures would increase somewhat if one computed the slight savings for discounts when purchasing materials and the processing costs for books, normally carried as overhead expenses. However one views the computation of the average book costs, the reduction in monetary loss is striking.

The Checkpoint security system has not been without its problems, but it has been remarkably free from two complaints which plagued early library theft detection systems: mechanical failure and false alarms. One faulty control box was replaced at the manufacturer's expense during the warranty period; minor mechanical problems with the turnstiles have been solved easily by local maintenance personnel. Beyond the alarm problem caused by the faulty control box in the early months of operation, there have been fewer than a dozen recorded false alarms during the two years the system has been in use.

While this security system was not expected to reduce the rate of mutilation of periodicals, there appears to be a slight carry-

over involved because fewer reports of mutilated periodicals have been received since the security system was installed. Although the bound periodicals have been targeted for detection by the system, the more probable causes of reduction in the mutilation of periodicals are the addition of several photocopy machines priced at five cents per copy, the more frequent use of microforms in lieu of binding for periodical titles, and a more liberal circulation policy for these materials. Still, it is interesting to note that the rate of book losses and the mutilation of periodicals seem to have dropped off together.

By any measure the Checkpoint Mark II security system in use at Northeastern Oklahoma State University has proven effective. In less than two years the monetary savings from the transfer of former exit control personnel and the reduction in book thefts have more than offset the cost of the system. Improved access to the building and better personnel utilization have been benefits attributable directly to the system but the biggest benefit is the reduction in the number of missing books. Students and faculty at this institution have access to more information, thanks to the "gadgetry" of an electronic theft detection system.

*Bibliography available from author.

¹J. W. Griffith, "Library Thefts: A Problem That Won't Go Away," American Libraries, IX (April, 1978), 224-27.

²Nancy H. Knight, "Theft Detection Systems for Libraries--A Survey," Library Technology Reports, XII (November 1976), 575-690.

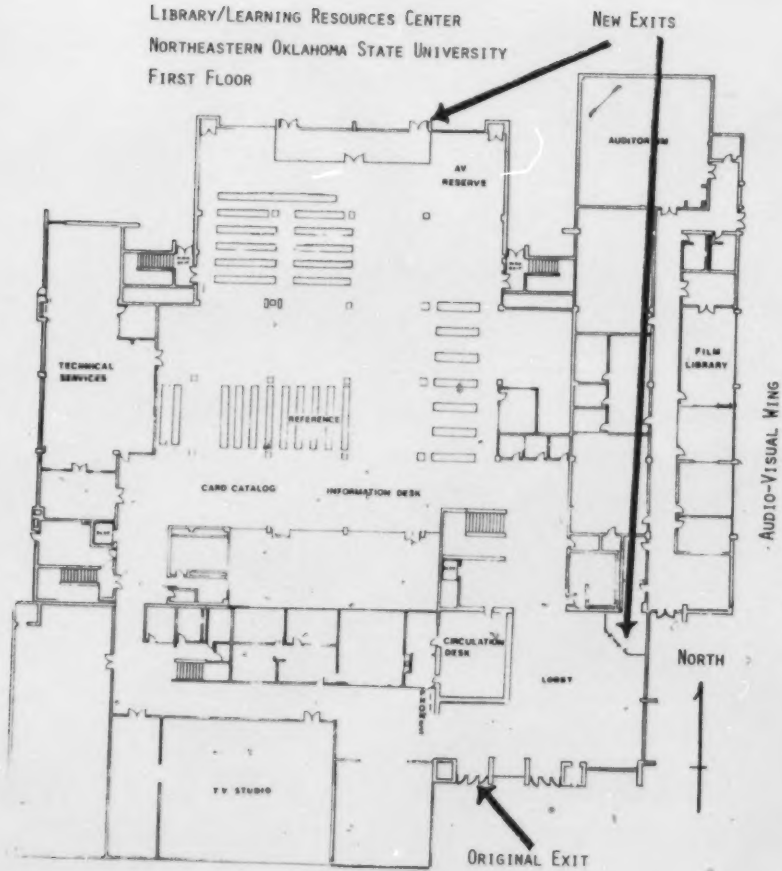
³Nancy H. Knight, "Library Security Systems Come of Age," American Libraries, IX (April 1978), 229-32.

⁴Griffith, p. 225.

⁵The 1976-77 list also included some items acquired in July of 1976 before the security system was installed.

⁶According to reports issued by the Office of Planning and Development at N.E.O.S.U., student credit hour production in the spring of 1977 was 4479, up from 4470 in the fall of 1974.

LIBRARY/LEARNING RESOURCES CENTER
NORTHEASTERN OKLAHOMA STATE UNIVERSITY
FIRST FLOOR



CHIEF GREENWOOD LEFLORE AND HIS
MALMAISON PLANTATION

R. Halliburton, Jr.*

Not all Choctaws emigrated to Indian Territory during the nineteenth century. Greenwood Leflore was one of many who remained in Mississippi. The romantic story of this Choctaw Chief, planter, businessman, and legislator had its beginning in 1792 when the French Canadian voyageur Louis Le Fleur arrived at Mobile in the French province of Louisiana. Louis Le Fleur soon established friendly relations with the Indians of the surrounding area, commenced trading with them, and established trading posts in Mississippi. One of his trading stations was called Le Fleur's Bluff and was situated near the present city of Jackson. He married Rebecca Cravat, a mixed-blood Choctaw princess,¹ and on June 3, 1800, Greenwood Le Fleur was born to the union.

The young Le Fleur was named Greenwood for an English sea captain, a friend and former partner of the elder Le Fleur. When Greenwood was about twelve years of age, his father was operating a trading post and tavern on the old "Natchez Trace" at a point still known as French Camp. A mail carrier named Major John Donley made regular deliveries between Nashville and Natchez past the Le Fleur establishment. The mail carrier was impressed by the youthful Greenwood--who could not speak a word of English--and took him to his Nashville home to attend school.²

Young Le Fleur remained in the Donley home for six years and during that time fell in love with Donley's daughter Rosa and desired to make her his wife. He apprised Major Donley of his love for Rosa and his wish to marry her. Both parents objected to the union, however, ostensibly because of the youthfulness of both parties. Consequently, some time later, Greenwood specifically asked Major Donley, "Sir, if you loved a beautiful maiden and her parents objected to the marriage, what would you do?" Donley reportedly replied, "I would steal the girl and marry her, anyway." Greenwood Le Fleur proceeded to "steal" Rosa and married her around 1820. The wedding ceremony was held in his father's plantation home and the numerous guests included many of the "elite" of Mississippi.³

It was about this time that young Le Fleur changed the spelling of his surname to Leflore, settled in Mississippi, and rapidly gained prominence and position among his Choctaw people. He was described by some as being as "ambitious as Lucifer." He became a Choctaw planter and was known as a progressive influence within his tribe. By the middle of the 1820's he was accumulating black slaves to till his fields. At the age of twenty-two he was chosen to be chief of the Western District of the Choctaw Nation; and at the Great Council of March 15, 1830, he was elected chief of the entire Nation.⁴

Leflore was active and initiated numerous reforms among his people. He urged permanent residences and cultivation of the land, helped establish schools, and encouraged his people to send

their children to them. He suppressed numerous "savage rights and customs," prohibited the charms and sorceries of medicine men, advocated civil marriage ceremonies, opposed divorces, and encouraged Christianity. He was also instrumental in repealing the ancient unwritten law of blood for blood and abolished the custom of raising poles over the graves of the dead.⁵

After negotiation of the Treaty of Dancing Rabbit Creek--the Choctaw removal treaty--Leflore became increasingly unpopular with his people. He was eventually deposed as chief in favor of his nephew, George W. Harkins. Consequently, when his people crossed the Mississippi River and headed for their new home in the West, Greenwood Leflore remained in Mississippi. The United States Government had previously awarded him a thousand acres of land and conferred the military title of "Colonel" upon him for his "services." When accused of accepting a bribe from the United States Government to sign the removal treaty, he reportedly replied, "Which is worse, for a great government to offer a bribe or a poor Indian to take one?"⁶

Leflore now owned a large plantation and regularly purchased additional black slaves from members of his family, neighbors, and slave dealers. His largest purchase was one hundred blacks secured from an estate in 1839. By this date he possessed thousands of acres of fertile land in the heart of the Mississippi delta. It has been reported that Leflore never separated families or sold slaves unless they proved to be unruly. This may have been true since he was a successful planter and was regularly purchasing rather than selling slaves. Therefore, he had no reason to separate families. His records indicate that he usually purchased slaves singly or in twos--and that most of them were young. A number of these purchases must have been separated from their relatives.

Around 1850 cotton planters were in their "golden age" and it had become fashionable to build splendid mansions in keeping with their wealth and station. About this time, James C. Harris, an architect and well-known builder from Georgia, appeared in Mississippi. He was a specialist in the construction of palatial plantation homes. These houses were usually built of wood, the heavy timbers hewed by hand and the other lumber purchased from local or nearby saw mills. A gang of highly trained slave builders and artisans did the actual construction under Harris's supervision. The slaves accomplished the most delicate interior finishing, carving, and decorative paneling as well as the less exacting work of framing.⁸

Greenwood Leflore had long dreamed of possessing a "wondrous manor house," and found his builder in the person of James Harris. He was most pleased to obtain Harris's services in 1854 and anxiously followed the steps of construction. Considerable thought was devoted to a proper and fitting name for the great plantation house. Leflore, a Frankophile, had been a lifelong admirer of Napoleon Bonaparte. When Napoleon divorced his wife, Josephine, she continued to be Leflore's heroine, a martyr to man's inhumanity like Joan of Arc. This admiration and empathy caused Leflore to christen his palatial plantation home "Malmaison," the "House of

Sorrow." This was the name of the chateau, ten miles west of Paris on the Seine, where Cardinal Richelieu had once resided and which later was occupied by Josephine. The "Widow Beauharnais" lived at her "Malmaison" from 1798 until her death in 1814.⁹

Greenwood Leflore's "Malmaison" was the largest house ever erected in Carroll County. All the lumber for the great house was cut from his own lands, sawed at his own steam-powered saw mill, and transported to the building site by his ox wagon teams driven by black slaves. The cypress sills were hand hewn and stored above ground for one year to season. The bricks for the foundation, walks, six fireplaces and chimneys, two large cisterns, and smoke-house were molded and fired by Leflore's slaves in his own kilns. The house was an imposing two story edifice built in the "favorite style of architecture of the 'Old South,' " with wide galleries, many balconies, wrought iron balustrades, lofty chambers, spacious hallways, and beautiful handcarved oak paneling. A picturesque observatory surrounded by a walkway and ornamental railing adorned the roof and afforded a spectacular view of the valleys, hills, and river for many miles.¹⁰

"Malmaison" contained fifteen rooms, eight of which measured 20X25X15 feet. The best French and English decorators were brought from New Orleans to decorate the house. Most of the furnishings for the great house were imported from France. The silver, embossed with wild roses, and the monogrammed crystal and china--imperial in its magnificence--came in sets of twelve dozen pieces. The silver and glassware were reportedly valued at \$150,000. The thirty by sixty feet dining room contained a butler's pantry where the tableware "were carefully washed by slaves and checked by the head slave." "The silver was then carried to the bedroom of the mistress." The furniture was constructed in France by special order. It was mostly of hickory and was overlaid with gold--not gilt--and upholstered in crimson silk damask. The marvelous Louis XIV drawing room set of thirty pieces was fashioned from solid mahogany, finished in gold, and reportedly cost \$10,000. The Duchess of Orleans attempted to purchase the set before it was shipped to Mississippi and, failing, ordered a duplicate set for herself.¹¹

Other furnishings included oil canvases from the hands of masters, family portraits by Benjamin West, beautiful mirrors in gold frames, tables, large four-poster beds of rosewood with silk and satin canopies, and four tapestry window curtains depicting the four palaces of Napoleon and Josephine--Versailles, Malmaison, Saint Cloud, and Fontainebleau. A rosewood piano graced the entrance hall and gun closets and ammunition chests were to each side of the front door, which was ornamented with silver hardware. There were eleven black Italian marble mantels. The parlor was lighted with a golden candelabra that burned whale oil. All interior doors were ten feet high, three feet wide, and two and one half inches thick. The floors were unstained, random-width planks beautifully carpeted.¹²

A detached kitchen stood some fifty feet from the house but was connected with it by a covered veranda. The kitchen contained two huge double fireplaces with cranes placed at various levels for cooking. The ceiling of each room held bell cords attached to

bells in the servants' quarters. The bell for each room had a separate and distinct tone allowing the black slaves to know which room required service. Leflore even collected a "superb" library to grace his new home. Fine wines were aged in a cellar under the carriage house and later stored in wine closets under the stair cases of the house.¹³

"Malmaison" and its furnishings were designed to accomodate and entertain two hundred guests at one time. This demanded a retinue of trained servants, and Leflore spared no expense to obtain them. In 1857 he purchased an eighteen-year-old mulatto girl, named Fanny, as a present for his wife. The \$1800 purchase price was large, but the girl was well trained to serve as the personal maid of the mistress of a large estate. One of the most memorable gala events held at "Malmaison" was the wedding of Greenwood Leflore's daughter, Rebecca. She married James Harris, the architect who had constructed the house. The bride received lavish gifts including a plantation and one hundred black slaves to operate it.¹⁴

A large gate, matching the house in design, admitted guests to the beautifully landscaped grounds which included handsome formal gardens, a miniature lake with swans, geese, and numerous varieties of ornamental fish. Holly, mimosa, boxwood, magnolia, jassamine, pine, cedar, and live oak trees graced the grounds. A stream near the mansion was dammed and stocked with game fish and the plantation had its own wild game preserve. Two guest houses provided ample space for the numerous visitors who appeared at "Malmaison." The Leflore family rode in the "handsomest" coach in Mississippi with a black slave driver in livery. The coach was upholstered in tufted satin damask held in place by ivory tacks. The vehicle was illuminated by silver and cut crystal lamps and silver hardware was widely utilized. Leflore once travelled all the way to Washington in the coach for a conference with President Andrew Jackson.¹⁵

"Malmaison" was approximately fourteen miles east of the present city of Greenwood, Mississippi. It eventually grew to more than fifteen thousand acres of fertile delta land and was worked by some four hundred black slaves. Cotton, corn, and other crops were grown in great quantities and the plantation was immensely profitable. The principal crop was cotton which was ginned and baled on the plantation, and then shipped aboard Leflore's own steamboat.¹⁶

Greenwood Leflore represented his county in the Mississippi House of Representatives for two terms and then served one term in the State Senate. Senator Leflore was constantly exasperated by his colleagues' interpolating considerable Latin in their speeches. One young senator once made an entire speech in Latin. Afterward, Leflore arose and commenced speaking in Choctaw. He continued for an hour; and when he had finished, he asked the senators which speech was better understood.¹⁷

As the Civil War approached, Leflore made several speeches against secession and warned his listeners that it would put their wives and daughters in the kitchen and at the wash tub. Leflore's enemies once set fire to "Malmaison," but "faithful slaves" quickly extinguished it. When the war commenced, he remained loyal to the Union. He refused to recognize the Confederacy and would not pay taxes to that government. One of his black slaves

was seized and sold to satisfy his Confederate tax debt, but friends paid the taxes and returned the servant to his master. Nevertheless, during the war Greenwood Leflore lost his cotton, all of his black slaves, and much other valuable property. He died at "Malmaison" on August 21, 1863, and is interred in the family cemetery on the grounds. Mrs. Jack (Nola Leflore) Brown of Tahlequah, Oklahoma, a great-granddaughter of Greenwood Leflore, was born in "Malmaison" in 1888. The federal government once attempted to purchase "Malmaison" in order to restore it as an historic landmark. The Leflore family refused to sell the mansion and continued to occupy it. "Malmaison" was never "modernized" but survived until March 31, 1942, when it was completely destroyed by fire of undetermined origin. Only a few pieces of silver and crystal and some chairs were saved from destruction.¹⁸

*Bibliography available from author.

¹"Malmaison and its Memories," p. 2; A 10-page typed manuscript in the archives of the Choctaw Agency of the Bureau of Indian Affairs at Philadelphia, Mississippi. Hereafter cited as Choctaw Agency manuscript; Mary Garland Barton Ingram, "Malmaison Home of Greenwood Leflore....," pp. 2, 3; A 13-page typed manuscript in the Indian Archives of the Oklahoma Historical Society, Oklahoma City, Oklahoma. Hereafter cited as Malmaison manuscript; Angie Debo, The Rise and Fall of the Choctaw Republic (Norman, University of Oklahoma Press, 1961), p. 58.

²Choctaw Agency manuscript, p. 3; Malmaison manuscript, p. 3.

³Choctaw Agency manuscript, pp. 3, 4.

⁴Ibid.

⁵Ibid., p. 6; Malmaison manuscript, p. 4.

⁶Choctaw Agency manuscript, p. 5; Mrs. N. D. Deupree, "Greenwood Leflore," Mississippi Historical Society Publications, Vol. 7 (1903), p. 146.

⁷Charles S. Sydnor, Slavery in Mississippi (Baton Rouge, Louisiana State University Press, 1966), pp. 131-133.

⁸Choctaw Agency manuscript, pp. 6, 7; Malmaison manuscript, p. 6.

⁹Choctaw Agency manuscript, p. 7; Malmaison manuscript, p. 6.

¹⁰Mrs. Lee J. Langley, "Malmaison, Palace in a Wilderness, Home of General Leflore," Chronicles of Oklahoma, Vol. 5, No. 4 (December, 1927), p. 372; Malmaison manuscript, p. 7.

¹¹Phil Harris, "Malmaison--The Mansion of Leflore," Muskogee, (Oklahoma), Sunday Phoenix & Times-Democrat, October 12, 1975; Langley, Chronicles of Oklahoma, p. 372.

¹²Malmaison manuscript, pp. 8, 10.

¹³Ibid., p. 13.

¹⁴Ibid.; Sydnor, Slavery in Mississippi, p. 131.

¹⁵Malmaison manuscript, p. 10.

¹⁶Deupree, Mississippi Historical Society Publications, p. 146; p. 146; Thelma V. Bounds, Children of Nanih Waiya (San Antonio, The Naylor Co., 1964), p. 42.

¹⁷Deupree, Mississippi Historical Society Publications, p. 150; Langley, Chronicles of Oklahoma, p. 379.

¹⁸Memphis, (Tennessee), Press-Scimitar, April 2, 1942.

A COMPARISON OF RANDOM NUMBER GENERATOR SUBROUTINES

Daniel L. Hansen*

The purpose of this project was to implement and compare two random number generators. By the term random number, of course, is meant "pseudo" random number. These numbers are actually calculated. Thus, the term random is not quite proper. One is a subroutine known as RANDU and the other is a function subprogram called BRAND. The listings of these programs appear in the Appendices. The subroutine RANDU is a subroutine brought to the writer by a student, but it is a well known program that was designed for the IBM 360 series. BRAND was found in Forsythe, Malcolm, and Moler.¹ The authors state that it is portable, but the writer found that it had to be changed to be made to run on the System-3 Mod 15 here at Northeastern Oklahoma State University.

Both programs are based on the power-residue method described by D. E. Knuth.² It is well known that the power-residue method has some problems but seems to be one of the prevailing methods of uniform random number generation. Forsythe, Malcolm, and Moler³ and Marsaglia⁴ discuss the drawbacks of the power-residue method.

The following two program fragments illustrate how RANDU and BRAND can be used to generate 1000 random numbers. The purpose of the illustration is to give a feeling for the use of these programs. Both require a seed that the author called IX and should be an odd number.

```
C  SAMPLE USING RANDU
      DIMENSION X(1000)
      IX = 677
      DO 10 I=1, 1000
          CALL RANDU(IX,IY,Y)
          IX = IY
          X(I) = Y
      10 CONTINUE
```

```
C  SAMPLE USING BRAND
      DIMENSION X(1000)
      IX = 677
      DO 10 I=1, 1000
          X(I) = BRAND(IX)
      10 CONTINUE
```

IX is the seed in RANDU used to produce the next random number IY, and IY is the output. YFL is a random real number between 0 and 1. It is necessary to rename IX as IX = IY in order to insure the continuation of the random number generation.

* The output of the function BRAND is a real number between 0 and 1 and requires as initial input the seed IX. After the first call to BRAND in a program the value of IX is not used.

As a test for the uniformness of the generators, programs were written to generate n random numbers and put them into m cells. The expected number in each cell is thus n/m . A chi-squared test with $m-1$ degrees of freedom was then performed to test the hypothesis that the distribution is uniform.

The following table displays some of the results obtained. The table includes execution time of the program.

Table 1

URAND			
<u>Trials</u>	<u>Cells</u>	<u>Chi-squared</u>	<u>Time</u>
<u>n</u>	<u>m</u>		
50000	100	56.88	8 min., 32 sec.
10000	100	77.88	2 min., 20 sec.

RANDU			
<u>Trials</u>	<u>Cells</u>	<u>Chi-squared</u>	<u>Time</u>
<u>n</u>	<u>m</u>		
50000	100	84.24	6 min., 38 sec.
10000	100	92.78	2 min., 46 sec.

The critical value for chi-squared with 99 degrees of freedom at the 99 percent confidence level is approximately 135. Thus, it can be seen that both random number generators meet this test since their chi-squared value is less than this. The chi-squared values are less for URAND. For this reason, the author recommends the use of URAND. In addition, it is obviously easier to use URAND in a program. The apparent discrepancy in time might imply that URAND is not good to use, but the author tends not to put much faith in the time if the particular computer run was made while the computer was running another program at the same time.

One final note to the user is to be made. When one uses either RANDU or URAND, the process card on the calling program should include the phrase UPACK-R2. This is required in order to be sure that the link editor finds RANDU or URAND on the simulated R2 pack.

With the addition of these programs to the subprogram library, it is now possible to write many different application programs using simulation or Monte Carlo methods. The literature is full of such examples in the fields of mathematics, physics, operations research, and many others, as well as in games. The two random number generators discussed should be sufficient for most applications in an educational environment, but it is recognized that they do have shortcomings that are well publicized. The reader can find a more detailed account of the drawbacks of RANDU in Forsythe, Malcolm, and Moler. These authors state that RANDU behaved so poorly on other tests when compared to URAND that it should be totally discredited as a random number generator.⁵

*Bibliography available from author.

¹G. E. Forsythe, M. A. Malcolm, and C. B. Moler, Computer Methods for Mathematical Computation (New York: Prentice Hall, 1977).

²D. E. Knuth, "Seminumerical Algorithms," The Art of Computer Programming, Vol. II (Addison Wesley, 1969).

³Forsythe, Malcolm, and Moler

⁴G. Marsaglia, "Random Numbers Fall Mainly in the Planes," Proceedings of the National Academy of Science, Vol. LXI (1968), pp. 25-28.

⁵Forsythe, Malcolm, and Moler, p. 244.

APPENDIX A

```

REAL FUNCTION URAND (IX)
  INTEGER IY

C
C   * URAND IS A UNIFORM RANDOM NUMBER GENERATOR BASED ON THEORY
C   SUGGESTIONS GIVEN IN D.F. KNUTH VOL 2. IT APPEARS ON P. 246 OF A
C   BOOK BY FORSYTHE, MALCOM, AND MOLER TITLED COMPUTER METHODS FOR
C   MATHEMATICAL COMPUTATIONS, PUBLISHED BY PRENTICE HALL IN 1977.
C   THE INTEGER IY SHOULD BE INITIALIZED TO AN ARBITRARY INTEGER
C   PRIOR TO THE FIRST CALL TO URAND. THE CALLING PROGRAM SHOULD NOT
C   ALTER THE VALUE OF IY BETWEEN SUBSEQUENT CALLS TO URAND. VALUES
C   OF URAND WILL BE RETURNED IN THE INTERVAL (0,1)

      INTEGER IA,IC,ITWO,M2,M,MIC
      DOUBLE PRECISION HALFM
C   SINCE THERE IS NO DOUBLE PRECISION IN SYS/3 WE USE REAL*8
      REAL*8 HALFM
      REAL S
C   DOUBLE PRECISION DATAN,DSQRT
      DATA M2/0/, ITWO/2/
      IF(M2.NE.0) GO TO 20

C
C   IF FIRST ENTRY, COMPUTE MACHINE INTEGER WORD LENGTH
C
C   THE NEXT STATEMENT HAD TO BE PUT IN SINCE S/3 FORTRAN DOES NOT
C   ALLOW THE ARGUMENT TO APPEAR ON THE LEFT SIDE OF AN EQUALS
C   STATEMENT, THE ORIGINAL ARGUMENT WAS IY
      IY=IX
      M=1
20  M2=M
      M=ITWO*M2
C   THIS STATEMENT WON'T WORK ON S/3
C   IF (M.GT.M2) GO TO 10
C   IT GOES ONE NUMBER TOO FAR IN THE SEQUENCE
C   WE REPLACE BY THE FOLLOWING
      IF (M+M2.GT.0) GO TO 10
C
      HALFM=M2

C
C   COMPUTE MULTIPLIER AND INCREMENT FOR LINEAR CONGRUENTIAL METHOD
C
      IA=8*IDINT(HALFM*DATAN(1.D0)/8.D0) +5
      IC= 2*IDINT(HALFM*(0.5D0-DSQRT(3.D0)/6.D0))+1
      MIC =(M2-IC) +M2

C
C   S IS THE SCALE FACTOR FOR CONVERTING TO FLOATING POINT
C
      S=0.5/HALFM

C
C   COMPUTE NEXT RANDOM NUMBER
C
20  IY= IY*IA
C
C   THE FOLLOWING IS FOR COMPUTERS WHICH DO NOT ALLOW INTEGER OVERFLOW
C   ON ADDITION

```

```

      IF (IY.GT.M1C) IY= (IY-M2)-M2
C
      IY = IY +IC
C
C THE FOLLOWING IS FOR COMPUTERS WHERE THE WORD LENGTH FOR ADDITION
C IS GREATER THAN FOR MULTIPLICATION
C
      IF(IY/2.GT.M2) IY= (IY-M2)-M2
C
C THE FOLLOWING IS FOR COMPUTERS WHERE INTEGER OVERFLOW AFFECTS THE
C SIGN BIT
C
      IF(IY.LT.0) IY=(IY+M2)+M2
      URAND =FLOAT(IY)*5
      RETURN
      END

```

APPENDIX B

```
SUBROUTINE RANDU'(IX,IY,YFL)
  IY= IX*65539
  IF(IY) 5,6,6
5  IY=IY+ 2147483647 +1
6  YFL=IY
  YFL=YFL/2147483647.
  RETURN
END
```

FEAR EVOKED BRADYCARDIA IN THE FREE
RANGING WOODCHUCK MARMOTA MONAX

E. Norbert Smith and Robert A. Woodruff*

The classic response to fear is increased heart rate and an overall readiness for "fight or flight." Several animals studied by radio telemetry have been found to show the opposite response. Free ranging Uinta ground squirrels¹ and alligators² show a marked reduction in heart rate when disturbed. The purpose of this study was to investigate the heart rate response of free ranging woodchuck Marmota monax to various fear stimuli.

Two woodchucks were live trapped, and multichannel radio telemetry transmitters³ were surgically implanted. Approximately 25 mg/kg Ketamine hydrochloride (Bristol: Ketaset plus) was injected intramuscularly for anesthesia. The transmitter was placed free in the abdominal cavity, and ECG electrodes were sutured subdermally at each end of the sternum. After a two week recovery period, the animals were released on Buzzard Island (approximately 35 acres) at Tenkiller Lake (Cherokee County, Oklahoma).

The animals were observed intermittently during the next two weeks. Heart rate averaged about 180 bpm. Twelve attempts were made to frighten the woodchucks. The stimuli included: a dog digging at the burrow, noise, people approaching the burrow, the release of a harmless snake into the burrow, and throwing rocks near the burrow.

Attempts to frighten the caged animals (prior to release) resulted in increased heart rate. After the animals had been released and had dug a burrow, all attempts to frighten the animals resulted in a marked decrease in heart rate. Figures 1 and 2 show a typical response with heart rate being reduced from over 150 bpm to less than 50 bpm. A period of overshoot characterizes recovery from fear evoked bradycardia in the woodchucks suggesting that an oxygen debt (or lactic acid build up) was incurred during bradycardia. The adaptive significance of fear evoked bradycardia on the woodchuck remains to be elucidated.

This research was supported by a NEOSU Faculty Grant and major funding from NIH(MBS).

*Bibliography available from author.

¹R. L. Ruff. "Telemetered heart rates of free-living Uinta ground squirrels in response to social interactions" (unpublished Ph.D. dissertation, Utah State University, Logan, Utah, 1971).

²E. N. Smith, R. D. Allison, and W. E. Crowder. "Bradycardia in a Free Ranging American Alligator," Copeia (1974), 720-772.

³Available from: Biotelemetry Systems, Inc., P. O. Box 10, Rush, New York 14543.

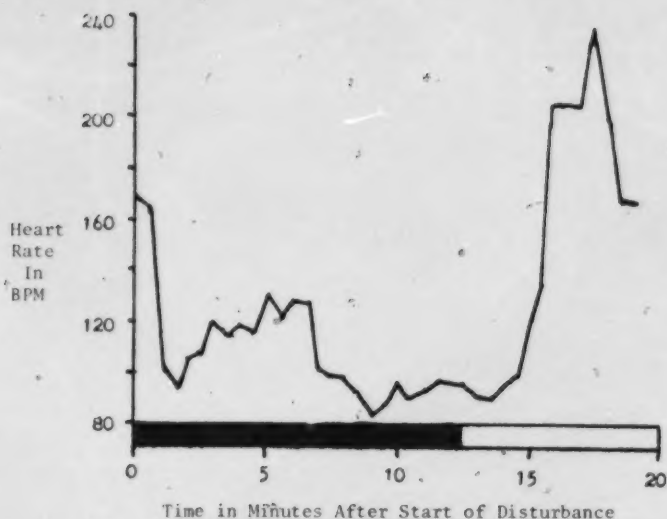


Fig. 1: Disturbance induced bradycardia observed telemetrically on April 2, 1978, on Buzzard Island in Lake Tenkiller. The disturbance was a dog and time 0 on the graph corresponds to 8:28 AM. The bar indicates the period of disturbance.

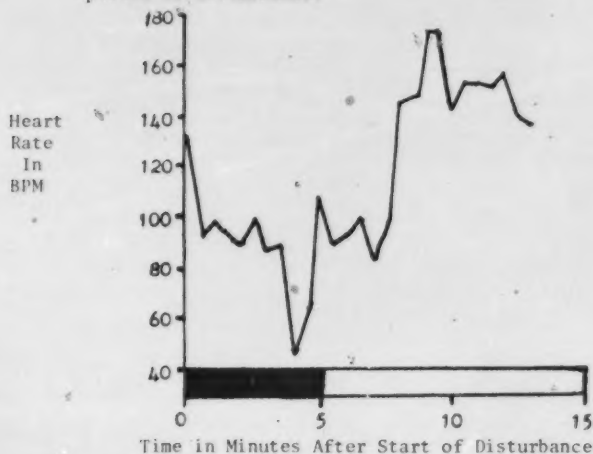


Fig. 2: Disturbance induced bradycardia observed telemetrically from the 3.3 kg male woodchuck on April 12, 1978. The measurements were taken on Buzzard Island in Lake Tenkiller and time 0 corresponds with 3:45 PM. The bar indicates the period of disturbance.

A METHOD OF TEACHING MANAGERIAL ACCOUNTING

Irma Stierwalt*

The purpose of this study was to survey the literature concerning methods of instruction in managerial accounting which are being used by accounting educators. Because of the time constraints on this report, the writer decided to focus on only one method of instruction--use of the computer as an aid in the instruction of managerial accounting.

Instructional methods which would provide opportunity for accounting students to obtain necessary skills, techniques, and concepts are important. In an article concerning accounting educators' responsibilities, Staubus stated that when accountants are reporting to management they are obligated to provide information that is useful for achieving goals of the enterprise. Accounting educators are expected to study and research and to identify the best methods of accounting so that well-educated accountants are turned out for entry into the profession. Not only the best methods of accounting should be taught, but the best methods of accounting instruction should be utilized so that the material can be presented to the students in an effective manner.¹ This report does not mean to imply that use of the computer is the only effective method, nor even the most effective method of instruction for managerial accounting, since no research was conducted in an attempt to determine whether this was the case. This method was chosen because of current interest in this procedure. According to the literature² the computer can be used to enhance the education process when it is used in conjunction with various teaching methods.

Management accountants give primary consideration to the internal users of accounting data. Goodlad contrasted management accounting with financial accounting and with cost accounting and concluded that management accounting is in effect an extension of cost accounting. He stated that it is "the accounting methods, systems, and techniques which, coupled with the special knowledge and ability (of the management accountant), assists management in its task of maximizing profits or minimizing losses." He concluded that some would go so far as to believe that the function of the management accountant has become somewhat more important than that of the financial accountant in recent years.³ Newton stated that management accountants are important members of the management team at all levels because their influence is felt through the preparation and interpretation of financial data underlying policy making and administration operations.⁴

Research conducted by this writer in 1975 revealed that sixty-nine per cent of a panel of experts consisting of accounting educators and practicing accountants agreed that accountants should have preparation in the area of management decision-making in order to be generally effective as an accountant.⁵ According to Kiesey and Pavlock, the growth of accounting firms has caused a need for more managers who are professionals in a technical sense (i.e. proficient in taxation, auditing, etc.) and also capable of managing

complex organizations. Many accountants do not possess the necessary managerial skills and so many accounting firms are having to train their accountants in this skill via in-house education programs.⁶

Recent literature has suggested that the role of management accountants is to meet the accounting data needs of management--to provide relevant information at timely intervals (more frequent than external financial statements), and to assist management in the decision-making process. This role will, in all probability, expand in future years.

In order to determine how the computer could be profitably incorporated into a managerial accounting class, a description of the skills, concepts, and techniques needed by managerial accountants and instructional methods available for providing these necessary skills were studied.

Since the American Institute of Certified Public Accountants could be considered to represent the practitioners and the authors of managerial accounting textbooks could be considered to represent accounting educators, these two sources were used to determine the skills, concepts, and techniques deemed desirable for a management accountant to have.

The AICPA has continuing professional development courses in management education which include communication skills, management styles, motivation, decision making and problem solving, and performance evaluation. Managerial accounting textbooks traditionally emphasize those aspects of accounting needed for interpreting and using accounting information such as full cost accounting, differential accounting, and responsibility accounting. These areas include alternative choice decisions, management planning and control activities, and performance evaluations.

It seems that the AICPA and the current managerial accounting textbooks are in agreement--perhaps with the exception of the communication skills area. Executives⁷ and other professional groups⁸ believe that accounting graduates generally lack basic skills in English grammar, spelling, and good written and oral communications. The research conducted by this writer in 1975 also showed that one hundred per cent of the panel of experts agreed that accountants should be proficient in these communication skills in order to be generally effective as accountants.⁹

Communication skills can be developed throughout the curriculum via any instructional method used. In particular, oral and written communication skills can be promoted by requiring students to express themselves orally through class discussion and case studies and to express themselves in writing through brief written reports, memoranda, and essay problems on tests. An accountant must be able to communicate the results of his work if he is to be effective, particularly if he is in a managerial position. However, since these skills can be obtained through a variety of instructional methods, the thrust of this report will be toward the other skills required of managerial accountants.

Burgoyne and Cooper conducted research on teaching methods in

management education through a survey of research literature. While the research was concerned with management education instead of managerial accounting, it is believed that the findings would apply to managerial accounting, also.

The list of teaching methods that emerged from an inspection of the research studies is as follows:

1. Lecture--including lecture/discussion
2. Textbooks--excluding programmed learning
3. Programmed instruction--in computer, machine, or text form
4. Role playing
5. Case studies
6. Games and simulations
7. Projects
8. "Packages"--relying heavily on set procedures, documentation and instrumentation
9. T group/social skill training
10. Combinations of the above methods

Burgoyne and Cooper did not attempt to evaluate the methods--they only compiled a bibliography of methods used and the number of studies which dealt with each method; however, the survey does provide a listing of instructional methods which are available to the educator and brings alternative methods to the attention of the educator.¹⁰

Burns, in a survey conducted in 1968, noted that it was hard to distinguish between what is a computer course, a managerial course, and a systems course since elements of all four may be found in a single course. The managerial accounting course had more variety of approaches and topic emphasis and scope of coverage than any other accounting course. He further stated that the most interesting or noteworthy courses (in his survey) used cases or the case method as one instructional method.¹¹ This writer decided to pursue the case method and to identify ways that the computer could be used to enhance this procedure.

In 1966, Boocock collected research data and determined that games provided empirical evidence of four general types of learning effects: (1) inducements to student motivation and learning; (2) vicarious experience, which provides students with an appreciation for and an understanding of real-life situations which they have not actually experienced themselves; (3) intellectual learning, both on a factual and a more general level; and, (4) changes in attitude which are importantly related to academic performance.¹² Games, in the opinion of this writer, are very closely related to case studies and similar results could be expected to be derived from case studies.

Harrison conducted research on computer usage in industry. He remarked that, in the twenty-seven industrial companies surveyed there was considerable growth in computer models applied to management functions of planning, problem-solving, and decision making. This, of course, indicated increased need for formal planning and systematic analytic decision making. Harrison further commented that the industrial leaders were of the opinion that it was easier to train a manager or an accountant to build a model, since the

model is based on the particular business firm, than to teach an operations researcher or computer specialist about the business.¹³

If computer models are all but essential in decision making and in formal planning, it seems that the accounting student should be taught this technique. This could be accomplished through a game, case study, and/or project in the managerial accounting course.

Some managerial accounting textbooks have decision problems included at the end of each chapter. Or, case studies can be obtained from various sources to supplement the traditional textbook material. Care should be taken to correlate these case studies with the learning experience desired. Reynolds in writing about the selection of cases which meet the students' needs remarked that in order to become a manager a student needs: (1) ability to recognize broad-range problems in his field; (2) working familiarity with concepts for solving problems; (3) experience in identifying problem situations; and (4) ability to cope with new situations. Case studies should be carefully selected to meet these needs.¹⁴

In an opinion survey performed in 1976, Said found that eighty-seven per cent of the accounting educators and sixty per cent of the practitioners who responded were of the opinion that quantitative in managerial accounting should definitely be included in the undergraduate accounting curriculum.¹⁵ Alexander contended that the computers in use in 1969 were not being fully utilized and recommended that a very important use would be for the improvement of the quality of managerial decisions.¹⁶ A case study method, utilizing the computer, should be an effective method for developing an understanding of quantitative and also for developing managerial decision-making skills.

Anderson introduced a computer application designed to expose students in a meaningful way to the use of computer and quantitative techniques in connection with managerial planning and control processes and to encourage students to explore managerial accounting problems to improve their problem-solving and interpretive skills.

Four routines were included in the Anderson Analytic Routines. These routines were: statistical package (retrieve, plot and perform time series or regression analyses); linear programming package (simplex algorithm and sensitivity analyses); capital budgeting program (profitability measures); and financial planning (pro forma statements and projections of sales, prices, and other similar items).

Anderson's analyses of these routines were based primarily on informal feedback from students, results of completed assignments, and responses to student evaluation questionnaires completed by participants in the pilot project. The student reaction was, in general, very positive. The four routines used a common case and this factor provided students with better perspectives of the interrelationship of the various analyses they had made.¹⁷

These analytic routines could be used along with the conventional textbook in managerial accounting to develop the students'

skills in problem solving and interpreting data, and as an introduction to the computer and quantitative techniques related to managerial accounting.

In conclusion, given the changing role of the accountant, it seems that managerial accounting is an important tool for preparing the accounting student of today for his role as an accountant of the future. Recent literature revealed that key responsibilities of management accountants include designing information systems, planning and controlling, and advising management concerning performance evaluation. The computer can play a major role in this strategic decision-making process. Therefore, it would be appropriate for the accounting educator to use the computer as an instructional aid in the managerial accounting course.

*Bibliography available from author.

¹George J. Staubus, "The Responsibility of Accounting Teachers," The Accounting Review, L (January, 1975), 160-170.

²Sarane Spence Boocock, "The Effects of Games with Simulated Environments Upon Student Learning," (Unpublished Ph.D. dissertation, John Hopkins University, 1966).

³J. B. Goodlad, "The Importance of Management Accounting," The Accountants Digest, (December, 1975), 99-102.

⁴Grant W. Newton, "Management Accountant: Catalyst for Change," Management Accounting, (July, 1976), 52-56.

⁵Irma Stierwalt, "An Evaluation of the Current Accounting Curriculum at Northeastern Oklahoma State University with Implications for Curriculum Revision," (Unpublished Ed.D. dissertation, Oklahoma State University, 1975).

⁶Douglas T. Kiesey and Ernest J. Pavlock, "Trends in Management Education for CPAs," Journal of Accountancy, (May, 1975), 48-52.

⁷"Gallagher's Presidents' Report," Industry Week, (June 18, 1973), 25.

⁸Herbert J. Weiser, "Accounting Education--Present and Future," The Accounting Review, XLI (July, 1966), 518-524.

⁹Stierwalt, loc. cit.

¹⁰John Burgoyne and Carl L. Cooper, "Research on Teaching Methods in Management Education: Bibliographical Examination of the State of the Art," Management International Review, XVI (1976), 95-102.

¹¹Thomas J. Burns, "Accounting Courses at Nineteen American Universities," The Accounting Review, CXXVI (January, 1968), 137-147.

¹²Boocock, loc. cit.

- 13 F. L. Harrison, "Computer Modelling in Practice," Journal of Institute of Chartered Accountants of Scotland, LXXX (June, 1976), 214-217.
- 14 John I. Reynolds, "Cases Which Meet the Students' Needs," Academy of Management Proceedings, (1976), 48-52.
- 15 Kamal E. Said, "Division Between Educators and Practitioners About Accounting Education: Is It in Professional or Academic Realm?" The Accountants Digest, (March, 1977), 118-123.
- 16 T. Alexander, "Computers Can't Solve Everything," Fortune, (October, 1969), 126-168.
- 17 John J. Anderson, "Computer-Supported Instruction in Managerial Accounting," The Accounting Review, LI (July, 1975), 617-624.

ORGANIZATION OF PHYSICAL EDUCATION AND SPORT IN THE USSR

Martha Sturdevant*

It is a little difficult to obtain a concise picture of the complex system of state and public organizations controlling physical education and sport in the USSR, as four differing views have been received from David Chambers, James Riordan, V. Stolbov, and a lecturer at the Central Institute of Physical Culture in Moscow. According to Stolbov, the structure is as follows:

Table 1

Soviet (Council) of Ministers of USSR State Organizations

Committee of Physical Culture and Sport	Public Organizations
Sub-committees from the fifteen republics	Young Pioneer Clubs
Regional, provincial, municipal and district Soviets	University Clubs
Forty-eight sports federations	Professional Sport Societies
Olympic committee	Trade-union and rural sport societies
Ministry of Education	Sporting clubs of the Ministry of Defense
Ministry of Higher Education	Sporting Clubs of the Voluntary Society for Assistance to Defense
State Committee of the Ministerial Council of USSR for Professional Technical Education	
Ministry of Defense	
Ministry of Health	
Ministry of Culture	

In addition, the Committee of Physical Culture and Sport has many specialized departments and boards such as Central Board for Physical Education of the Population, Central Sporting-Methodic Board, Board of Specialists and Educational Institutions, Board of Soccer, and Board of Aquatic Sports.

From the lecturer at the Central Institute of Physical Culture, this writer received the following structure:

- Supreme Council of Ministers
 - Committee of Physical Culture and Sport
 - 1. Public Health Commission
 - a. Physical Culture Committee
 - b. Sports committees of fifteen Republics as well as the USSR
 - 2. Trade Union organizations
 - 3. Professional-technical organizations
 - 4. Ministry of Public Education
 - 5. Youth societies
 - 6. Sport boarding schools
 - 7. Summer camps

There are also sport committees for each different sport which work in conjunction with eleven different equipment companies. The latter receive most of their operating income from lotteries on sports (two million roubles annually).²

Chambers stated, "The Central Sports Committee of the USSR is responsible for all aspects of sport in the Soviet Union." The Committee is composed of six sections: (1) Games, (2) Winter Sports, (3) Soccer, (4) International Sports, (5) The Physical Culture Institutes, and (6) the Special Science Section.³

Riordian said "... overall direction of the sports movement is provided by the Committee on Physical Culture and Sport attached to the USSR Council of Ministers. ... Actual organization is in the hands of thirty-six sports societies, all but two of which are run by the trade unions, including fifteen urban Republican, fifteen rural Republican and four All-Union. ... The two non-trade-union societies are Dynamo and Labour Reserves. ... The one major sports organization outside the framework is the Central Army Sports Club."⁴

It can be seen from all of the above that there is a complex network of organizations controlling the organization and development of physical education and sport in the USSR and that this facet of Soviet life is considered very important.

The foundations for physical education are set up on scientific and methodical bases and include the following:

Foundations for Physical Education

General theory

1. Principles, Curriculum, Norms
2. How to move
3. Increasing ability
4. Process of physical education

Age Aspects

1. Theory and methods of youths
2. Theory and methods of adults

Theory of Directions (Core of Physical Education Programs)

1. Theory of general physical education
2. Theory of sport
3. Theory of applied physical education - i.e., industry
4. Theory of competition
5. Theory of recreational, rehabilitational direction
6. Theory of specific sports

Philosophical aims and specific objectives are based on the GTO complex of tests (Labor-Defense Fitness) which include general skill and achievement in specific sports. This complex is organized in the following way with norms for different age groups, and exercises must be passed before one progresses to the next stage.

1. General Skill - GTO Tests

- a. Age 10-11 and 12-13
- b. Age 14-15
- c. Age 16-18
- d. Age 19-39 for men; 19-34 for women

e. Age 40-49 and 50-60 for men; 33-44 and 45-55 for women

2. Specific Sports - All Union Sports Classification

- a. Three junior rankings
- b. Three senior rankings
- c. Four additional rankings:
 - Candidate for Master of Sport
 - Master of Sport
 - Master of Sport, International Class
 - Merited Master of Sport

Regarding specific sports, the nature of the sport determines at what age the child must begin specialization. For example, gymnastics, swimming, and skating must begin sooner than team sports.

The entire system of physical education and sport as well as calendar of events for competition is set up by the state and is divided into two general areas of control:

State or Government

- 1. Nursery and Kindergarten
(Ages 3-7)
- 2. Secondary Schools
(Ages 7-17)
- 3. College
(2 years required)
- 4. Army, 2 years
- 5. At Work

Public

- 1. Sport Clubs, all ages,
i.e., Dynamo, Spartak, etc.
- 2. Physical education in family and community
- 3. Sport camps and rest homes

Training of physical education specialists is accomplished through four different higher education institutes, including 217 physical education institutes and three scientific research institutes. These include the following:

- 1. Technical institutes: These schools train mostly teachers for nursery, kindergarten, and rural collectives.
- 2. Pedagogical institutes: These students are trained mostly to teach in secondary schools.
- 3. Universities with faculty for physical education: Most of these students are becoming teachers, although a few coach.
- 4. Institutes of Physical Culture: The vast majority of these graduates become coaches.
- 5. Physical Culture research institutes: These students go into scientific research dealing with problems relating to physical education and sport.⁵

Riordan gives a slightly different classification than was given in the lectures.

Altogether, there are 160,000 specialists in physical education from the above institutions and the country has 75,000 coaches, five million amateur coaches, four million judges and referees. The state decides how many specialists to train for the teaching market and this is coordinated with the erecting of new facilities, complexes, schools, and clubs.

Responsibility for organization of competitive sports also rests

with the state. Annual city and regional competitions are organized for school children as well as for sport clubs; the types of sports selected vary as to climate and geographical location. In addition to the Committee on Physical Culture and Sport and Ministry of Education, other groups take part in the planning, such as the Municipal Department of Education and the Communist Union of Youth (Comsomol). Provincial competitions culminate in Soviet championships. Once a year there is a traditional All-Union competition and once every two years an All-Union Spartakiade is held.

The following figures give some idea of the numbers participating in physical education and sport in 1976:

- 50 million children and youth engage in physical education;
- 6 million students are in higher education;
- 2 million youth are in special sport schools;
- 10 million pass GTO tests for their age group;
- 5-6 million take sports training;
- 25 million adults participate in physical education at work;
- 6 million adults are in fitness groups;
- 1½ million adults are in health groups for handicapped;
- 39 million youth and adults participate in competition;
- 15 thousand pass the GTO tests by the age of 39;
- 5 thousand have the Master of Sport ranking;
- 70 have a Master of Sport International Class.⁶

In the United States, organization of physical education within the schools is usually the domain of city, county, or rural school boards with laws or guidelines set up by each state. The federal government does not regulate physical education, and state laws vary greatly. Until two years ago the State of Oklahoma had no requirement for physical education; and when House Bill 1036 was passed two years ago, it simply stated that all children from kindergarten through twelfth grade should receive 150 minutes of physical education weekly. To achieve a standardized program throughout the state is a virtual impossibility, as is enforcement of the law; and there is a group of State Representatives backed by their constituent counties attempting to repeal the law on the basis that it is both impractical and difficult to implement. Having made a poll of elementary schools in Oklahoma regarding House Bill 1036, the writer found facilities and staff ranged from zero to excellent and that the attitude of principals had the same wide range.⁷ In contrast, Tulsa, Oklahoma, has one of the best systems of physical education in the United States, both in organization and implementation. In general, it can be said that the success of any physical education school program in our country depends upon the attitude of the citizens involved and the relative wealth of its community.

Physical education in higher education also varies from school to school. Few colleges and universities require physical education for four years, and many have either dropped their two year requirement to one year or made the program entirely elective.

Organization of competitive sports in the United States, although not controlled by the federal government, is more standardized than the physical education program within the schools. However,

recognition of athletic ability is often random and many get into a particular sport simply by peer or parental pressure. As in the USSR, there are city and state championships. Regional and national championships are either handled by an association for that particular sport or by the Amateur Athletic Union. On the university level the two main organizations controlling men's athletics are the National Association of Intercollegiate Athletics (NAIA), for smaller colleges and universities, and the National Collegiate Athletic Association (NCAA), for large state universities. The newly formed Association for Intercollegiate Athletics for Women (AIAW) functions for women. There are interchange and overlap between organizations under which one may compete. For example, a female athlete at a university may compete in synchronized swimming for the AAU and AIAW and International Academy of Aquatic Art (IAAA), or in gymnastics with AAU, AIAW, or United States Gymnastics Federation (USGF).

The United States also has a network of organizations which control all professional sports for professional athletes. Such a thing does not exist in the USSR; all athletes are students, coaches, teachers, or workers in other occupations. Competition as a profession is not considered a lifetime work. From this point of view the Soviets regard all their athletes as amateurs.⁸ From our point of view, those competing on an international level are professionals, as they are subsidized by the state during their period of competition.

The United States Olympic Committee is also separate from the government, but President Carter has mentioned setting up an advisory board to look into and set up guidelines for the various sport organizations, especially those involved with international competition. This may result in some governmental reorganization or control in the future.

It can be seen from the above that the Soviet system of physical education in the schools and competitive sports is much more highly organized than that of the United States. Of course, a socialist government can achieve this more readily, but it also points up the facts that physical fitness is a major concern in the USSR and that the more indirect political influence potential from achievement at the Olympic Games is considered important.

*Bibliography available from author.

¹V. Stoilov, "Organization and Handling of Physical Education and Sports in the Soviet Union," (Information thesis for Canadian delegation, 1977), 1-2.

²Lecturer from the Supreme Council of Ministers of USSR representing the Committee of Physical Culture and Sport, Summer, 1977.

³David L. Chambers, "The Training of Coaches in the Soviet Union," (Concordia University Press, 1976), p. 1.

⁴James Riordan, "Sport and Physical Education in the Soviet Union," (Society for Cultural Relations with the USSR, London S.W. 9, 1975),

p. 4.

⁵Lecturer from the Supreme Council of Ministers of USSR.

⁶Ibid.

⁷Martha Sturdevant. "A Survey Regarding House Bill 1036 and Some Implications for Elementary Schools in Oklahoma." (Northeastern Oklahoma State University Press, 1974), p. 41.

⁸Lecturer from the Supreme Council of Ministers of USSR.

A MODEL FOR ESTABLISHING GRAPHIC COMMUNICATIONS
WITHIN THE PRACTICAL ARTS DIVISION AT
NORTHEASTERN OKLAHOMA STATE UNIVERSITY

Earl G. Yarbrough*

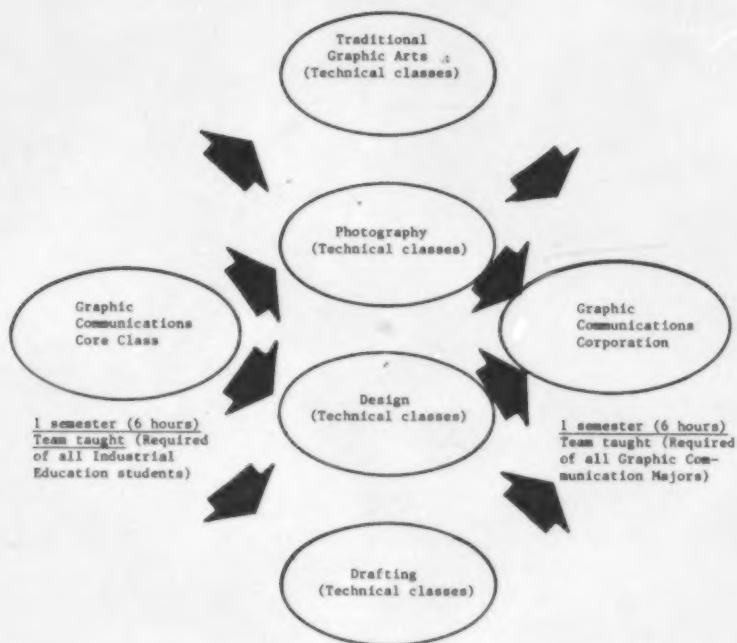
From the early sixties, there has been a great deal of concern on the part of many industrial arts educators to improve the industrial arts curriculum. During the sixties, many institutions of higher education across the country developed innovative approaches to industrial arts that were invented to make industrial arts more relevant.¹ Traditional industrial arts at that time did not seem to reflect the changing times. Advancing technology seemed to be making obsolete most traditional industrial arts programs. Many innovative industrial arts educators saw the traditional program as nothing more than a "mini-skills" training program. Endowed with the philosophy that industrial arts is a part of general education, these innovators of the sixties set out to find a workable rationale for modern industrial arts. The results of their efforts have been reflected in a number of junior and senior high school industrial arts programs across the country. The Maryland Plan,² Industrial Arts Curriculum Project,³ Industriology Project,⁴ Orchestrated Systems Approach,⁵ and The Alberta Plan⁶ have all made an impact on the field.

Although there were many different ideas discussed and programs presented during the sixties, all of them seem to have one common concept: change industrial arts education from a study of unit areas (i.e., drafting, metal, woodworking) to an interpretation of modern industry and/or technology. All aspects of industry and modern technology were included. For example, the Industrial Arts Curriculum Project's *The World of Manufacturing* covers such areas as Man and Technology, Industrial Organizations, Ownership and Profit, Technical Writing and Illustrating, Hiring and Training, Casting and Molding, and The Manufacturing Corporation. The new programs were intended to broaden the scope of industrial arts education and to make it more justifiable. The seventies brought about an additional concern. As new and advancing technology was constantly changing our lives, tools, machines, and ways of thinking, the traditional industrial arts school program could hardly keep pace. As a result, a number of educators began to group (cluster) related areas (graphic arts, drafting, photography) together in order that related concepts could be taught.⁸ For example, a concept such as photo drawing is best taught using a cluster approach as it involves not only traditional drafting concepts but also photography and reproduction procedures. The concept is best taught using the graphic communications cluster concept.

With the rationale of the innovative programs of the sixties and seventies as a basis for future industrial arts programs, the following proposal was established. Using the concepts of the sixties and seventies, a program that not only teaches modern industry (totally) but also groups common concepts would be most beneficial. In addition, the model that follows also involves

the student in in-depth training that is so valuable for those individuals who plan to use their skills in a technically oriented occupation.

The model is illustrated below:



IN-DEPTH CLASSWORK

The model provides the necessary introductory material to acquaint the student with the many related fields and relationships involved in graphic communications as well as an opportunity to develop specialization in an industrial area. In addition, the final class or culminating experience involves the student in a corporation experience that relates all technological learned areas (drafting, photography, etc.) in a total interpretation of modern industry.

The following explanation of each area will help to explain the model.

Core Class. This is a one semester, six hour class that replaces the general drafting and introductory graphic arts class. The class

is team taught in order that the experiences of traditional teachers can aid in the total concept of cluster technology. The core class attempts to present an overview (in a lecture/project manner) of graphic communication. Projects will be totally graphic communications related.

In-Depth Learning. During this phase, the student moves through a series of typically traditional classes, except that each class has an orientation to the graphic communications concept. Classes that are now being offered such as pipe drafting and structural drafting make up this phase of the classwork.

Graphic Communications Corporation. This is the last or senior level class that involves a number of students in a graphic communications corporation concept. A company is formed; a product is designed, developed, and manufactured; stock is sold; and the product is marketed. This experience would include all the phases of modern industry. All students would assume a role in the corporation. At the end of the semester, the company would be liquidated.

*Bibliography available from author.

¹Leslie H. Cockran, Innovative Programs in Industrial Education (Bloomington, Illinois: McKnight and McKnight Publishing Company, 1970), pp. 14-16.

²Ibid., pp. 80-83.

³Ibid., pp. 77-80.

⁴Ibid., pp. 49-52.

⁵Ibid., pp. 52-54.

⁶Ibid., pp. 74-77.

⁷Donald G. Lux and Willis E. Ray, The World of Manufacturing, Bloomington, Illinois: McKnight and McKnight Publishing Company, passim.

⁸William D. Wolansky and John B. DuVall, "Curriculum Relevance for Industrial Arts," Journal of Industrial Education, XII (1975), 56-67.

Abstracts of Faculty - Student Research Projects

SCREENING VARIOUS MATERIALS FOR SO_2 ADSORPTION

Dr. George Nolan, Charlotte Butcher,
Theresa Leep, and Robert Pollock

The United States owns thirty-eight percent of all known coal reserves while its population constitutes only six percent of the world population. This gives the United States a decided advantage in the energy picture. However, there are a number of problems with a coal based energy source, one of which is the sulfur that is present in much of the coal. When coal that contains sulfur is burned, the sulfur is converted to a health hazardous gas, namely, sulfur dioxide (SO_2). Technology for the removal of SO_2 from the combustion gases of coal must be developed if coal is to serve as a clean energy source. One solution to the problem is to find materials that will reversibly adsorb SO_2 from combustion gases of coal. A number of materials have been screened for the removal of SO_2 . Of all the materials that have been screened, only two show promise, namely, calcium oxide (ten percent SO_2 adsorption) and silica (three percent). Supported by NIH Grant #5 S06 RR08123.

STUDY OF SO_2 ADSORPTION USING A MICROBALANCE

Dr. George Nolan, Walter Campbell,
and Gary Welch

The United States owns thirty-eight percent of all known coal reserves while the population of the United States constitutes only six percent of the world population. This gives the United States a good advantage in the energy picture. However, there are a number of problems associated with the coal based energy system, one of which is the presence of sulfur in the coal. When coal that contains sulfur is used in combustion processes the sulfur is converted to SO_2 which is a health hazardous gas. Consequently, the coal technology for the removal of SO_2 from coal combustion gases must be developed if coal is to be used as a clean energy source. One solution to the sulfur problem of coal is to find materials that will reversibly adsorb SO_2 . A study dealing with the adsorption of SO_2 on solid surfaces utilizing a microbalance has been conducted. A microbalance has been constructed that has a sensitivity of the order of 10^{-8} g. The microbalance consists of a pyrex manifold which houses the balancing beam and the reaction vessel, a Helmholtz coil for balancing the beam, power supply and slide wire potentiometer to power the Helmholtz coil for balancing beam, standard resistors, power supply and recorder for measuring current flowing through the Helmholtz coil,

vacuum pump, manometer, and power proportioning temperature controller. The microbalance will be used to determine the amount of SO_2 that various materials will adsorb or lose. Supported by NIH Grant #5 S06 RR08123.

THE DEFORMATION OF A VISCOUS PARTICLE EMBEDDED IN A VISCOUS MATRIX WHEN THE MATRIX IS DEFORMED BY SIMPLE SHEAR

Dr. Lanny Joe Reed and Gayle Pray

Viscous particles are embedded in a viscous matrix, and the matrix is deformed by simple shear. The deformation of the particle is determined by sectioning the matrix after deformation. Initial results indicated that the procedures developed yield reproducible results. The techniques developed will be used to investigate the particle deformation when the viscosities of the matrix and particle are varied.

PHYSIOLOGICAL THERMOREGULATION OF THE
SOFT SHELL TURTLE, TRIONYX SPINIFER

Dr. E. Norbert Smith and Steven R. Adams

Ten soft shelled turtles, Trionyx spinifer, ranging in weight from 8.2 grams to 7.38 kilograms were heated and cooled in water and air. Thermal time constants were calculated and weight regression formulas obtained by the method of least squares. The animals heated and cooled at the same rate in air, but heating rates exceeded cooling rates in water. Dead animals heated and cooled at the same rates in water. Large turtles tended to heat in a slightly smaller fraction of the cooling time than small turtles. Regression formulas in water were $t_w = 8.04 \pm 0.05 M^{0.54 \pm 0.026}$, $t_c = 14.80 \pm 0.09 M^{0.609 \pm 0.038}$ and $t_v = 22.74 \pm 0.26 M^{0.604 \pm 0.062}$ respectively for warming, cooling and dead. The soft shell turtle exhibits a high degree of physiological thermoregulation in spite of a high surface to volume ration inherent in its flattened geometry. Supported by NIH Grant #5 S06 RR08123.

TEMPERATURE IN A FREE-RANGING WOODCHUCK,
MARMOTA MONAX

Dr. E. Norbert Smith and Jack R. Hinds

A multichannel subcarrier ECG and body temperature transmitter was surgically implanted into the abdominal cavity and two electrodes placed between the skin and musculature in the thorax and chest region in two adult woodchuck, one male, and one female. After recovery, the female was released in a man-made burrow on Buzzard Island, Lake Tenkiller, and monitored telemetrically for a twenty-four hour period by means of a portable VHF radio. We found a marked decrease

in body temperature during the cool of evening and an increase during activity such as digging with an increase in heart rate. Supported by NIH Grant #5 S06 RR08123.

THE ACTIVE INGREDIENTS IN ECHINACEA

Dr. J. R. Irelan and Harrold Stopp

The objective of this research is to obtain specific organic compounds or substances from the genus *Echinacea* by standard laboratory methods including, but not exclusive to, extraction and chromatography. The methods employed are solvent extraction, using nonpolar to polar solvents on dried shredded plant parts with subsequent chromatographic treatment of the extracts. The analysis of specific substances and mixtures will be carried out using current instrumentation (GC, IR, UV, and NMR) and any chemical methods necessary. At present, two non-polar extractions on commercially available plant roots have yielded a mixture of about 20 components from 1.41 percent of dry plant weight. The work has just begun and will be continued in an attempt to correlate individual substances obtained with possible medicinal uses of the plants. Supported by NIH Grant #T32-GM07604.

ECTOPARASITES OF BATS IN EASTERN OKLAHOMA

Dr. E. Norbert Smith and Lisa Walker

It is known that parasites of endothermic animals often represent a reservoir of infectious agents harmful to man. This is especially problematic when carriers of parasites lodge in human dwellings. Bats often roost in houses, and little is known of the ectoparasites infesting bats. The purpose of this study was to assess the kinds and numbers of ectoparasites found to infest bats found in North-eastern Oklahoma. Several species of bats, including *Eptesicus fuscus*, *Plecotus townsendii* and *Pipistrellus subflavus*, were collected and ectoparasites counted and removed for identification. Bedbugs, *Cimex* spp, ticks, *Ornithodoros* spp, batflies (Family Streblidae) and mites were found. Supported by NIH Grant #5 S06 RR08123.

RESPONSE OF THE WOODCHUCK (*MARMOTA MONAX*) TO THREAT

Dr. E. Norbert Smith and Patricia A. Williams

The behavior of the woodchuck has been reported in several papers and books, but little has been done on the specific responses to threat whether submissive or aggressive. The work dealing with these responses was done under laboratory conditions with three woodchuck (one female and two males), two (one female and one male) of which had a multichannel subcarrier ECG and temperature transmitter in their abdominal cavity. To elicit the desired response, the animal was grasped by the back of the neck or woodchips were flung into the face of the animal. The actions, posture, and heart rate were

recorded using a portable VHF radio and a cassette recorder. In response to these stimuli, the woodchuck would sit back on its haunches and chatter its teeth, and the heart rate would increase to as high as 260 bpm from the resting rate of about 170 bpm. Supported by NIH Grant #5 S06 RR08123.

DISTURBANCE-EVOKED BRADYCARDIA
IN A FREE-RANGING WOODCHUCK,
MARMOTA MONAX

Dr. E. Norbert Smith and Robert A. Woodruff

A multichannel subcarrier ECG and temperature transmitter was surgically implanted into the abdominal cavity with the two electrodes for the ECG sewn in place subdermally at either end of the sternum. The woodchuck was allowed to recuperate for two weeks and then it was released on Buzzard Island in Lake Tenkiller. After the woodchuck had found a place of refuge, a dog was released in the area. As the dog barked and tried to dig out the woodchuck, the heart rate was carefully monitored by means of a VHF portable radio and recorded with a cassette recorder. The recording was demodulated and a physiograph record obtained. During the time of disturbance, the heart rate was observed to drop from its previous value of 168 bpm to a low 80 bpm. Supported by NIH Grant #5 S06 RR08123.

CYTOLOGICAL EFFECTS OF THYROID HORMONE ON HEPATIC CELLS

Dr. Gary VanDenbos and Waleah Baker

There seems to be a great deal of variability concerning the effect of thyroid hormone on liver cell size. It has been observed that the wet weight of the tadpole liver can nearly double in response to thyroid hormone treatment, with no increase in total DNA. This would presume that the liver cell will absorb H_2O to the extent that its wet weight would nearly double. We are interested in determining the effect of Triiodothyronine (T_3) on the diameter of the hepatic nuclei. Nineteen animals were divided into three major groups: a control group, a group treated with 3×10^{-7} M T_3 , and a group treated with 1×10^{-7} M T_3 . After the hepatic tissues were removed, they were fixed, embedded, and sectioned. The diameters of the nuclei were determined by using an ocular micrometer. We found essentially no change in nuclear size as a result of hormone treatment. Supported by NIH Grant #5 S06 RR08123.

USE OF AUTORADIOGRAPHY TO ESTIMATE THE RELATIVE
RATES OF CELL REPLICATION DURING MATURATION
IN THE BULLFROG TADPOLE

Dr. Gary VanDenbos and Karen Carter

A radioactive label, tritiated thymidine, has been used to estimate the turnover of DNA in liver tissues during spontaneous

metamorphosis and thyroid hormone induced metamorphosis of the bullfrog tadpole, *Rana catesbeiana*. This was done by estimating the amount of "fixed" radioactivity associated with the nucleus by autoradiography. Tritiated thymidine incorporation was determined during thyroid hormone induced metamorphosis and spontaneous metamorphosis. The livers were histologically prepared, dipped in a nuclear emulsion, stained, and then examined microscopically. The number of labeled cells per field was determined for each experimental group. Our data suggest that tritiated thymidine incorporation into mitochondrial DNA and into nuclear DNA by a repair mechanism is negligible. It appears that there is a slight increase in the number of cells synthesizing DNA during advanced stages of spontaneous metamorphosis and hormone induced metamorphosis of the bullfrog tadpole. Supported by NIH Grant #5 S06 RR08123.

THE EFFECT OF CHEMOTHERAPEUTIC AGENTS ON CERTAIN MATURATION PARAMETERS OF THE BULLFROG TADPOLE

Dr. Gary VanDenbos and Robert Phillips

The degree to which hepatic tissue is dependent on the synthesis of DNA for urea synthesis during metamorphosis was investigated using specific DNA synthesis inhibitors as probes. The body to tail ratio was measured during drug administration as well as urea production. Pharmacological doses of 5-Fluorouracil and hydroxyurea did not inhibit tail resorption or the transition from the ammonotelic to the ureotelic state. Our observation suggests that DNA synthesis is not necessary for the induction of urea enzymes in the liver of the metamorphosing animal. Supported by NIH Grant #5 S06 RR08123.

RAISING LOCAL RANA CATESBEIANA IN CONTROLLED LABORATORY CONDITIONS

Dr. Gary VanDenbos and Rick Powell

The primary objective of the study was to identify local sources of bullfrog tadpoles and to define the conditions necessary to maintain the animals. A search was made of local ponds, creeks, and portions of the Illinois River. The most desirable source proved to be a series of spring fed ponds north of Tahlequah. Of two hundred animals captured April 24, the average weight was found to be 36.4 grams (random selection). Seventy-five animals were brought in on June 9, with an average weight of 62.4 grams. Two hundred fifty-five additional animals were added June 13 with an average weight of 69.26 grams. Animals were taken from the same source and were in approximately the same stage of development. These animals were placed in the holding tanks in the N.E.O.S.U. animal care facility. The well water use in the facility is 18° with the standing tank temperature maintained below 20°. Animals were fed a diet of canned polk weed. Tanks were drained and cleaned every other day. We have observed no mortality. Supported by Faculty Small Research Grant, Northeastern Oklahoma State University.

THE EFFECT OF TWO CHEMOTHERAPEUTIC DRUGS ON
HEPATIC NUCLEIC ACID BIOSYNTHESIS

Dr. Gary VanDenbos and Reggie Scott

Two related drugs, 5-Fluorodeoxyuridine (FdUrd) and 5-Fluorouracil (FU), have been shown to inhibit DNA synthesis in bacterial systems by a specific mechanism. These drugs are commonly used by the medical community as chemotherapeutic agents. It is unclear which of these forms is the more effective. Most medical literature does not express a preference for one form or another of the drug. With that in mind, we analyzed the effect of FdUrd and FU and found that FU does not significantly inhibit the incorporation of deoxyadenosine (dAdo) into acid insoluble alkali resistant material (DNA). FdUrd does significantly inhibit the incorporation of dAdo into the presumptive DNA fraction. We have also noticed that FdUrd mediates a significant increase of dAdo into the RNA and have described two alternative biochemical pathways consistent with our observation. Supported by NIH Grant #5 S06 RR08123.

Individual and Group In-Service Activities and Research in Progress

COLLEGE OF ARTS AND SCIENCES

Division of Arts and Letters

- Arias, Bogdanka. Preparation of Slides and Tapes for Spanish Courses.
- Cottrill, Tom. Establishing a Contemporary Music Group for Northeastern Oklahoma State University; Establishing a Drama Workshop for High School Students; Establishing a Summer Music Camp for High School Students; and Updating the Curricula Structure of the Degree Programs in the Division of Arts and Letters.
- Collins, Ken. "Northeastern's Image as Perceived by Alumni and Tahlequah Business Persons"; "Factors Influencing 1977 Freshman Class to Attend Northeastern."
- Foster, Gary. Development of the Four-Semester-Hour Class Piano Project.
- Jarrell, James A. Securing and Cataloging Additional Slides for Humanities Collection.
- Littlefield, Valgene. Preparation of a Syllabus for Speech 4183, Speech Activities for the Child.
- Lombardi, Betty R. Preparation of Slide Collection of Folk Customs, Folk Celebrations, Folk Arts, Folk Foods, and Folk Architecture of Italy.
- McQuitty, Robert A. Revision of Syllabus for English 1213, Freshman Composition.
- Murtha, Frances. Planning a Day for Students of French and German.
- Myers, Ed. Preparation for Piano Recital.
- Norwood, Mary Catherine. "The Teaching of Written Composition in Elementary Schools."
- Phillips, Ron, James Jarrell, and David Laney. Investigation of Courses to be Added to the Humanities Curriculum.
- Smith, Maurine. Revision of Syllabus for Humanities 2413, Introduction to Literature.
- Thompson, Eugenia. Construction of Scrapbooks for 1978 Retirees.

Tibbetts, Bruce. "Satan as Hero of Milton's Paradise Lost."

Udosen, Willye Bell. "Image of the Black Woman in Modern Black American Plays, 1900-1970."

Willis, Phyllis. Compilation of Bibliography of Literature for Adolescents to be Used in English 4133, Teaching English in High School.

Division of Natural Science and Mathematics

Anderson, Joe M. Development of the Laboratory Facility for Botany for the Function of Starting and Maintaining Plant Cell and Callus Cultures; The Continuation of the Collection of Local Flora; Development of the Herb Garden and Arboretum on the Grounds of the Cherokee Historical Society Complex with Emphasis on the Plants Used by the Indians in Primitive or Present Times.

Bowman, Seldon W. The Construction of Teaching Aids for Teaching Science Education.

Bryan, Robert C. "Geochronology of Canina Torquia and Other Fossils."

Clarke, George N. "The Demonstration and a Suggested Immune Role of Man's Antibodies Against Salmonella Enteritides Endotoxine."

Grant, Charles A. "Follow-up Study of Graduates with Majors in Science and Mathematics."

Harvey, Bob, and Charles A. Grant. The Development of a Mathematics Laboratory.

Grigshy, Everett M. The Development of the Jones-Mershon Tract as an Outdoor Classroom.

Ketcher, Austin. The Development of a Central Stockroom.

Monks, Herbert V. The Construction of a Salary Schedule for the Faculty of Northeastern Oklahoma State University.

Smith, Jerry A. Biotoxicity Analysis and Program Development.

VanDenbos, Gary V. "Homarine Metabolism in Artemia Salina"; "Hormonal Regulation in Amphibians"; Use of Brine Shrimp as an Animal Model for Undergraduate Education.

Wheat, Emmet. Building Enthusiasm for Northeastern Oklahoma State University.

Division of Social Science

Chipp, Sylvia. Continuation of a Study of Asian Women in Transition; Continuation of a Study of the ERA in Oklahoma.

Davis, Billy Joe. "Political Biography of J. Howard Edmondson"; Coordination of Plans for the Sixth Annual Symposium on the

Freedman, Alex. "Exploration and Theoretical Development of Tertiary Groups"; The Development of a Program for the Training of Directors of Industrial Athletics.

Halliburton, Rudia. "Black Slavery Among the Choctaw Indians"; "The History of Northeastern Oklahoma State University."

Haskins, V. Lyle. "Stanley Baldwin's Program for European Disarmament."

Maxwell, Amos. The Preparation of a Book of Readings in American Government; Preparation of a Textbook on Oklahoma Government.

Rader, Brian. "The Use of Non-computer Simulations in Classroom Teaching"; "Enrollment Trends by Race in the Black Politics Course."

Sheff, Norman C. "The Use of Historical Chronological Data to Enhance the Development of Concepts in Social Science Units, Part II, 1919-1945."

Turner, Adele. "Follow-Up Study of 1976-77 Graduates of the Social Science Division of Northeastern Oklahoma State University."

COLLEGE OF BEHAVIORAL SCIENCES

Division of Health, Physical Education, and Recreation

Dobbins, Jack. Revision of Handbook for Coaching Basketball.

Holland, Kenneth A. "Number and Degree of Success of Left-Handed Intercollegiate Basketball Players."

Division of Education and Psychology

Coppedge, Lloyd. NCATE Report.

DeLoache, Dan. "Survey of Graduates of the Master's Program in Junior College Teaching."

Denton, Coker J. A Study to Determine the Skill Attainment in Mathematics of Elementary Education Majors Upon Entering Education 2113 and Upon Enrolling in Education 4365.

Eyman, David. "An Analysis of Bibliographical Citations in Master's Papers at Northeastern Oklahoma State University"; "An Analysis of Elevator Traffic in the Library/Resources Center."

Fite, Elwin. "An Analysis of Faculty Needs."

Fites, Gilbert. "'And Was the Holy Lamb of God on England's Pleasant Pastures Seen?'" (Collection of visual materials.)

Gatlin, Elissa, Ernest Robinson, and Richard Allen. "Retention Problems and Concerns of Minority Students."

_____, John Rolland, and W. Harold Jones. Needs Assessment for

American Speech and Hearing Certification Requirements for
Clinical Programs in Special Education--Speech Pathology.

- _____, Stephen Panton, William Ward, and W. Harold Jones. Impact of P.L. 94-142 on Education of Pre-Service Teachers.
- Goldstein, Steven. "A Study of Grades and Faculty Ratings."
- Harreld, Jerry. "A Follow-Up Study of the Graduates of the Master's Program in Guidance"; Preparation of Audio Tapes for Use in Education 5173, Methods and Techniques of Counseling.
- Herrelein, Donald E. Development of Teaching and Audio-Visual Resources for Psychology 4343, Psychology of Human Sexuality.
- Holland, R. Fount. "A Follow-Up Study of Students Who Completed the Indian Intern Teacher Training Program."
- Jones, James W. "An Evaluation of the Teacher Education Program at Northeastern Oklahoma State University."
- McClure, Major L. "A Faculty Evaluation of the Administrative Structure of Northeastern Oklahoma State University."
- Norwood, Tracy B. The Development of a Syllabus and Instructional Materials for Psychology 3323, Psychology of Adolescence.
- Painton, Stephen W. "Sex and the Single Frequency."
- Pennington, Bud. "An Analysis of Intern Teaching Activity Records."
- Underwood, Ross. "A Statistical Report on Those Students Currently Enrolled (1977) in Education 2113, Education in the United States."
- Vandiver, Bob. An Evaluation of the Seminars in Intern Teaching.
- Wheat, Helen. "Pictorial History of the Campus of Northeastern Oklahoma State University"; Preparation of Brochures of Special Collections.

COLLEGE OF BUSINESS AND INDUSTRY

Division of Business

- Day, William H. Completion of Textbook: Managing Small Business Profitably.
- Foster, Ralph E. The Automation of the Library's Audio-Visual Aid Catalog to Enable Frequent Revision and Re-Issue of the Catalog; The Automation of Northeastern Oklahoma State University's Physical Inventory Records and Computerization of Records Maintenance and Report Preparation.
- Griffith, Norris A. "Improving the Methods of Management of Pre-Start-Up Events for New Facilities."

Holmes, Juanita, and Edward G. Polivka. Proposed Sequence of Course Offerings in Business Administration.

Stearns, Ray A. Review of American Institute of Certified Public Accountants' Library Materials.

Stierwalt, Irma L. Preparation of Syllabus for Accounting 5313, Special Problems in Accounting.

Wheeler, Clifford E. Implementation of Personalized Instructional System for Teaching Economic Principles Class.

Wiley, Dorothy. "Comparison of Traditional Versus Individualized Teaching Methods in Two Sections of Business Communication"; Use of Simulation in Business Administration 3113, Business Communication.

Williams, Earl R. Teaching Microeconomic Principles by Using Three Dimensional Models.

Division of Practical Arts

Carter, Virgil. Preparation of Slides and Tapes for Industrial Education Recruitment.

Cottrell, Evelyn. Preparation of Slides and Scripts for Home Economics Department Recruitment.

Eastlick, Mary Ann. Preparation of Brochures for Fashion Merchandising Internship and for the Clothing, Textiles, and Fashion Merchandising Program.

Gann, Raymond. The Development of Building and Curriculum Needs of Industrial Education for 1980-85.

Isom, Vernon. "A Follow-Up Study of the Graduates of Industrial Arts Division."

Ruby, Donald D., and Earl Yarbrough. Development of a Core Course in the Area of Graphic Arts and Drafting.

VanSchuyver, Marie H. Determine the Need for a Child Development Laboratory on the Campus of Northeastern Oklahoma State University.

Published Articles, Books, and Creative Works

- Agnew, Brad, and Helen Wheat. "Special Collections Department of Northeastern Oklahoma State University," Chronicles of Oklahoma, Spring, 1978.
- Arrington, Ruth. "Alex Posey: Creek Statesman, Journalist, and Poet," Essays on Minority Folklore. Institute for Minority Studies, 1977; "Indians Speak," Group Performance of Literature, Prentice-Hall, Inc., 1977; "Indian Studies: Where Are We?" Association for Communication Administration, October, 1977.
- Davis, Billy Joe. Rev. of James Willard Schultz (Apikuni), Why Gone Those Times, ed. Eugene Lee Silliman (Norman: University of Oklahoma Press, 1974). Chronicles of Oklahoma, Fall, 1977.
- Day, William H. "Self-Service: A Contemporary Marketing Strategy," The Monthly Gasoline Stand, June, 1977; "TBA: The Untapped Potential for Maximizing Service Station Profits," The Monthly Gasoline Stand, July, 1977; "Promoting Sales Through Car Wash Installations," The Monthly Gasoline Stand, August, 1977; "Using Service Station Operating Statistics to Improve Managerial Control," The Monthly Gasoline Stand, September, 1977; "Changing Patterns of Crude Oil Production and Utilization," The Monthly Gasoline Stand, October, 1977; "Other Dimensions of Petroleum Marketing: Industrial Sales and Petrochemicals," The Monthly Gasoline Stand, November, 1977; "Hydrogen: A New Fuel Technology," The Monthly Gasoline Stand, December, 1977; "A Summary Analysis and Projection of Contemporary Petroleum Marketing," The Monthly Gasoline Stand, January, 1978.
- Foster, Gary. "Development of a Preservice Student Teaching Program in Music Education for Northeastern Oklahoma State University." Doctoral Dissertation, Louisiana State University, 1977.
- Freedman, Alex. Review of Harold L. Sheppard and Sara E. Rix, The Graying of Working America: The Coming Crisis of Retirement-Age Policy (Free Press, 1977). Rural Sociology, in press.
- Friend, Guy. "Reading: A Detective's Job," Selected Articles on the Teaching of Reading. Barnell Loft, Ltd., 1978; "Reading for Comprehension: Find the Structure," Selected Articles on the Teaching of Reading, Barnell Loft, Ltd., 1978.
- Fuson, Lonnie, J. T. Sego, and Robert Vandiver. Junior College Handbook. Tahlequah, Oklahoma, Northeastern Oklahoma State University, 1978.
- Gill, Harpal. "Political Philosophies and Interdisciplinary Perspectives," The Social Science Journal, XIV (April, 1977).

- Goldstein, Steven. "The Rokeach Dogmatism Scale with Graduate Students, College Faculty in Psychology, and Professionals in Psychology." Doctoral dissertation, University of Northern Colorado, 1977; "Dogmatism Levels Among Faculty Psychologists, Professional Psychologists, and Graduate Students." Address at the Oklahoma Psychological Association Convention, November, 1977; "School Psychometricians in Oklahoma, an Opinion on Legal Ethical Conduct." Address at the National Association of School Psychologists Convention, March, 1978.
- Grigsby, Everett. "Comparison of Signature Whistles in Tursiops truncatus," Cetology, in press.
- Haskins, V. Lyle. Review of Max Krueger, Second Fatherland: The Life and Times of a German Immigrant (Texas A. and M. University Press, 1976) xx. Chronicles of Oklahoma, Summer, 1977; Review of Lee Taylor, Pend Oreille Profiles (Fairfield, Washington, 1977). The Register of the Kentucky Historical Society, Spring, 1978; Review of John L. Snell, The Democratic Movement in Germany, 1789-1914 (The University of North Carolina Press, 1976) xx. Red River Valley Historical Journal of World History, 1978.
- Johnson, Calvert. "Felix-Alexandre Guilmant," The Diapason, LXVIII (May, 1977, and June, 1977); "Spanish Keyboard Ornamentation, 1535-1626," The Diapason, LXIX (January, 1978).
- Kozlowski, Gene J., Ralph E. Foster, and Chad Smith. Cherokee Blood Quantum Study. Tahlequah, Oklahoma: The Cherokee Nation of Oklahoma, 1977.
- Painton, Stephen W. "Individual Pitch Functions and Pitch-duration and Cross-dimensional Matching," Perception and Psychophysics, XXI (May, 1977).
- Rader, Brian F. "The Political Outsiders: Blacks and Indians in a Rural Oklahoma County." Doctoral dissertation, University of Oklahoma, 1977; "Black Leadership in a Rural Oklahoma County," Proceedings of the Southwestern Social Science Association, April, 1978; "Ethnic Politics in a Rural Oklahoma County," Proceedings of the Western Social Science Association, April, 1978.
- Smith, E. Norbert, Stanley Robertson, and Donald G. Davies. "Cutaneous Blood Flow During Heating and Cooling in the American Alligator," American Journal of Physiology, in press.
- Smith, Maurine S. "Lonely Rebel," Valley Views, XIII (Summer, 1977); "Nonsense," New Earth Review, II (August, 1977).
- Stierwalt, Irma L. "An Evaluation of the Current Accounting Curriculum at Northeastern Oklahoma State University with Implications for Curriculum Revision" (abstract), Alpha Epsilon 1977 Research Issue, Spring, 1977.
- Swanson, Bernice M. Understanding Exceptional Children and Youth. Chicago: Rand-McNally College Publishing Co., in press.

- Underwood, Ross. "History of the Cherokee Advocate," Cherokee Advocate, April, 1977; "Last Ride to Ft. Gibson," Frontier Productions, December, 1977; "Coffeyville: Last of the Daltons," Frontier Productions, XX May, 1978.
- Varner, Donald. "Getting Children into the Dictionary," Oklahoma Reader, XIII (Fall, 1977); "Tricks for Teaching Compounds," Reading Teacher, XXXI (March, 1978); "Teaching Vocabulary Development--Beyond Writing Definitions," Selected Articles on the Teaching of Reading. Barnell Loft, Ltd., 1978; "Activities for the Teaching of Structural Analysis," The Reading Clinic, in press; "Activities for the Teaching of Contextual Expectation," The Reading Clinic, in press; "Activities for Vocabulary Development," The Reading Clinic, in press; "The Dictionary--If They Don't Like It, They Don't Use It," The Reading Clinic, in press; "Domino Sentences," The Reading Clinic, in press; "Bigfoot's Recess Review," The Reading Clinic, in press.
- Ward, W. J. "The Mentally Retarded: Definition, Assessment, and Etiological Aspects," Educating Exceptional Children and Youth. Chicago: Rand McNally Publishing Co., 1978; "The Mentally Retarded: Educational Home and Community Consideration," Educating Exceptional Children and Youth. Chicago: Rand McNally Publishing Co., 1978.
- Willey, Dorothy M. "The Bartlesville, Oklahoma, Chapter of the National Secretaries Association: A Case Study." Doctoral dissertation, Oklahoma State University, 1977.
- Yarbrough, Earl. "A Contemporary Approach Role for Industrial Arts," The Journal of Epsilon Pi Tau, Fall, 1977.
- Walker, James P. "Taming of the Shrew Maintained Fine Pace," Cherokee County Chronicle, August 4, 1977; "Twentieth Century Players Succeed with Black Comedy," Pictorial Press, February 9, 1978.

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